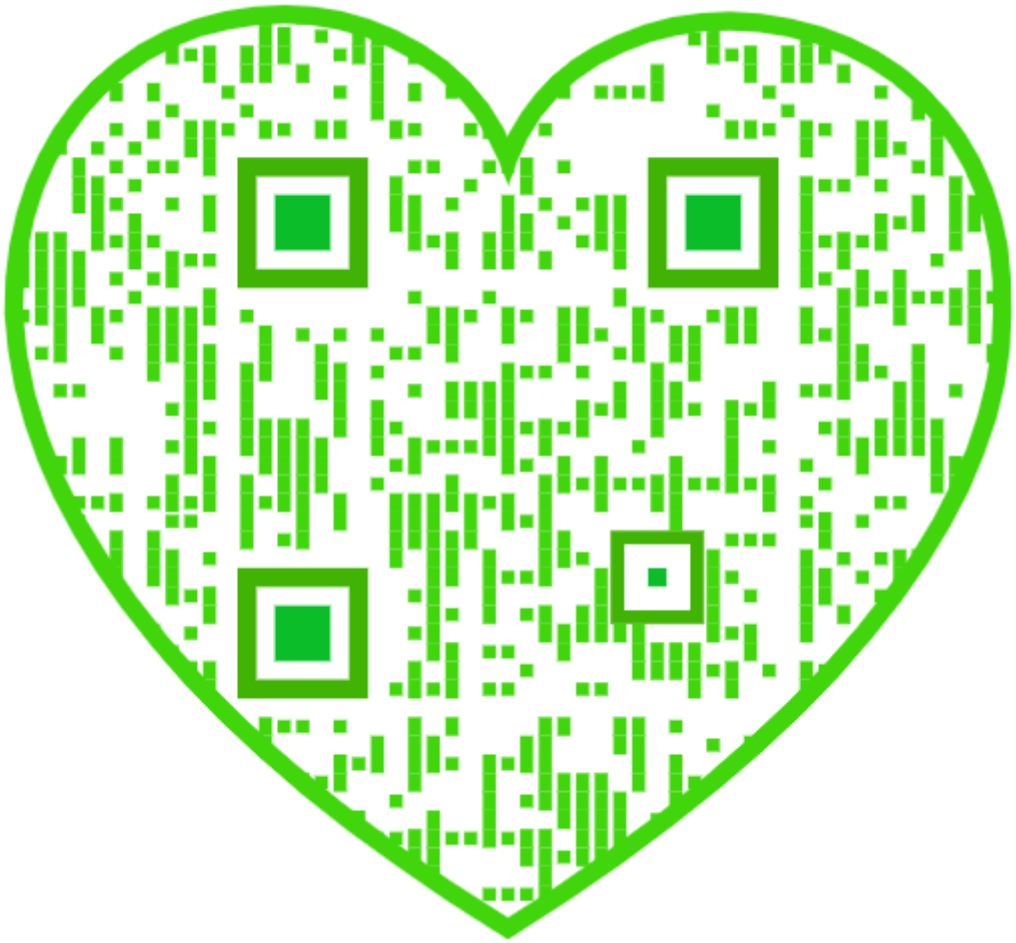

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JULY 1921

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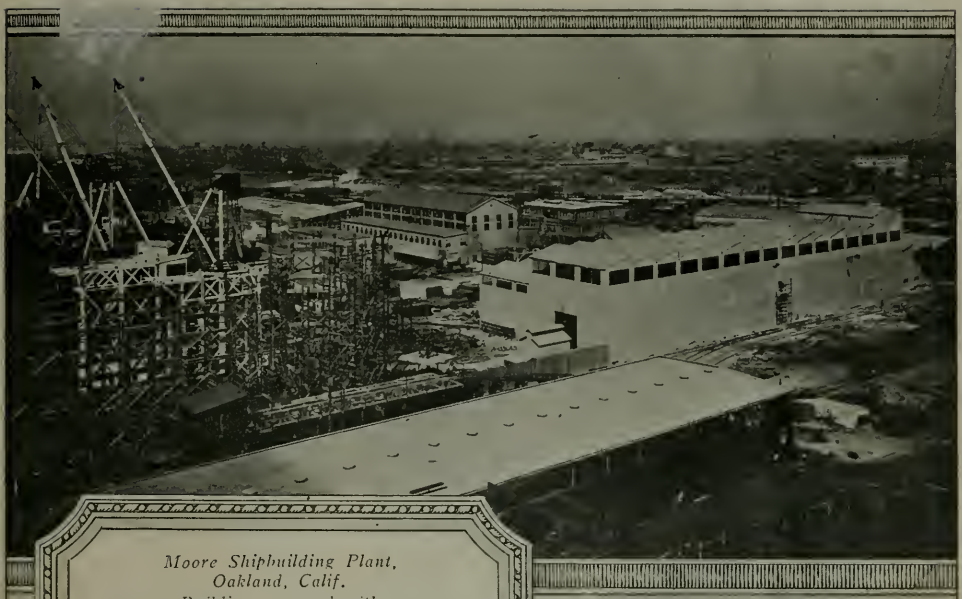

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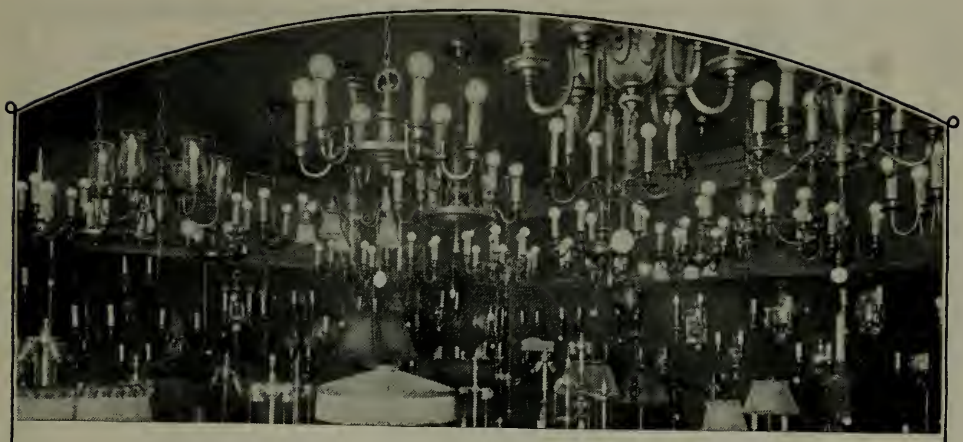

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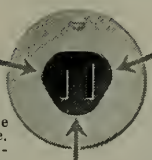

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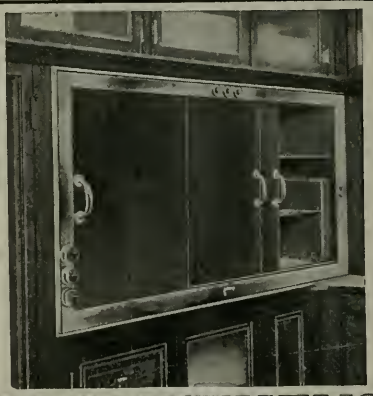

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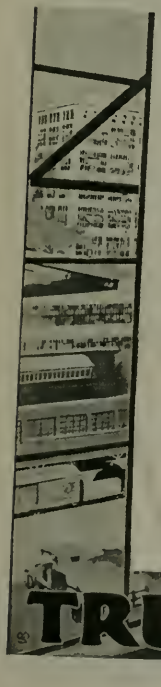

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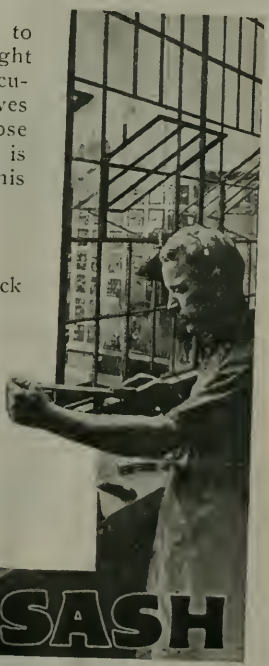

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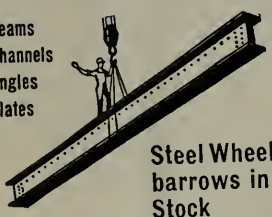

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K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE HARDENER
Gunn, Carle & Co., Inc., 444 Market street, San Francisco.

CONCRETE MIXERS
Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

CONCRETE REINFORCEMENT
Edw. L. Soule Co., Rialto bldg., San Francisco.
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.
Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
Garnett Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
Barrett & Hilp, Sharon Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
R. W. Littlefield, 357 12th St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.

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Will protect your building and business from destruction by fire and reduce your Insurance Rate. Write for estimates.

Pacific Fire Extinguisher Company

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424-440 Howard Street, San Francisco Manufacturing Plant, 298 Fremont St.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL—Continued

John M. Bartlett, 357 Twelfth St., Oakland.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
Herbert Beckwith, 323 Newton Ave., Oakland.
Collman & Speidel, 546 Monadnock Bldg., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 180 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran, R., Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Del Favero & Rasori, 180 Jessie St., San Francisco.
Jas. L. McLaughlin, 251 Kearny street, San Francisco.

CONTRACTORS' EQUIPMENT

Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONVEYING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CRUSHED ROCK

Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Gunn, Carle & Co., Inc., 444 First street, San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.
Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Waterhouse-Wilcox Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Oregon.
Stanley Works, New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS

Haws Sanitary Drinking Faucet Co., 1808 Harmon St. Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom street, San Francisco.
M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
Central Electric Company, 185 Stevenson street, San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Liberty Electric Company, 479 Sutter St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
H. S. Tittle, 766 Folsom St., San Francisco.
Spencer Electric Co., 355 12th street, Oakland.
Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT

Garnett Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Electric Outlet Co., Inc., 119 West 40th St., New York.
Safety Electric Company, 56-65 Columbia Square, San Francisco.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Western Electric Safety Mfg. Co., Inc., 247 Minna street, San Francisco.

ELEVATORS

Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom street, San Francisco.

ELEVATOR EQUIPMENT

Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL

Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE

Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

ESTIMATOR—BUILDING AND ENGINEERING WORKS

Arthur Priddle, 185 Stevenson street, San Francisco.

FAIENCE TILE

Tropico Potteries, Inc., Glendale, Cal.

FANS AND BLOWERS

Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE

Standard Fence Construction Co., 245 Market St., San Francisco, and 310 12th St., Oakland.

KEWANEE
GARBAGE BURNERS AND BOILERS

YEOMANS
BILGE PUMPS
EJECTORS
HOUSE PUMPS

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE BRICK
- Livermore Fire Brick Works, 604 Mission street, San Francisco.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.

FIRE INSURANCE
- Bankers & Shippers Insurance Co., Insurance Exchange Bldg., San Francisco.

FIRE PROOFING
- American Insulex Company, Berkeley Bank Bldg., Berkeley.

FIRE-PROOF DOORS
- Forderer Cornice Works, 269 Potrero avenue, San Francisco.
- U. S. Metal Products Co., 330 10th street, San Francisco.
- Fire Protection Products Co., 3117 20th street, San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—DUST PROOF CEMENT
- L. Sonneborn Co., United Materials Co., San Francisco agents.

FLOORS—HARDWOOD
- Oak Flooring Manufacturers' Association of the United States, Ashland Block, Chicago, Ill.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Hardwood Company, 511 First street, Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FLUSH VALVES
- National Valve Company, 23-25 Minna St., San Francisco.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., Coast Sale offices, San Francisco, Los Angeles and Seattle, Wash
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES AND INCINERATORS
- Kerner Incinerator Co., 77 O'Farrell St., San Francisco.
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission st., San Francisco.
Cobbledick-Kibbe Glass Co., 175 Jessie St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT
Ellery Arms Co., 583 Market St., San Francisco.
A. G. Spalding & Bros., 625 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Hardwood Company, First street, near Broadway, Oakland.

HEATERS—AUTOMATIC, GAS, ELECTRIC
Electric Sales Service Co., mfrs. of Therm-elect Water Heater, West Berkeley.
"Humphrey Radiantfire," The General Gas Light Co., 768 Mission St., San Francisco.
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING CONTRACTOR'S, EQUIPMENT, ETC.
Alex Coleman, 706 Ellis St., San Francisco.
C. A. Dunham Co., Sheldon Building, San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Moline Heat, Hobart Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
O. M. Simmons Co., 115 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; office in Chronicle Bldg., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant streets, San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Johns-Manville Co., all principal coast cities.
L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

INCINERATORS
Kerner Incinerator Co., 77 O'Farrell St., San Francisco.

INTERIOR DECORATORS
Atherly Bros., 2032 Polk St., San Francisco.
Martin & Frederick, 1374 Sutter St., San Francisco.
John Breuner Co., 281 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
Taylor Galleries, 1818 Harrison street, Oakland and San Francisco.

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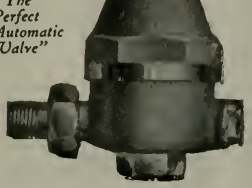

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

INTERIOR DECORATORS—Continued
The Tormey Co., 1042 Larkin St., San Francisco.
A. Quandt & Son, 374 Guerrero street, San Francisco.

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Thomas Day Company, Mission, near Third street, San Francisco.
Roberts Mfg. Co., 663 Mission St., San Francisco.
Perfeclite Manufacturing Co., Seattle, Wash.; San Francisco Representatives, Myers & Schwartz, 75 New Montgomery street, San Francisco; 1119 S. Los Angeles street, Los Angeles.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco

LUMBER
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California street, San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.

METAL DOORS AND WINDOWS
Fire Protection Products Co., 3117 20th St., San Francisco.
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

METAL FURNITURE
Forderer Cornice Works, 269 Potrero avenue, San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.
Frank Portman, 1619-20 Mission St., San Francisco.
Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.

OFFICE EQUIPMENT
C. F. Weber Co. 985 Market St., San Francisco.
Rucker-Fuller Co., 677 Mission St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

OIL BURNERS
Bunting Iron Works, 1215 First Nat. Bank bldg., San Francisco.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

ORNAMENTAL IRON AND BRONZE.
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San cisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
Atherly Bros., 2032 Polk St., San Francisco.
Wayne & Williams, 1914 Fillmore St., San Francisco.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.
A. Quandt & Son. 374 Guerrero street, San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.
Palace Hardware Co., 581 Market St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PLAYGROUND APPARATUS
A. G. Spalding & Bros., 625 Market St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis street, San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
All-In-One Company, Ochsner bldg., Sacramento.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
National Valve Company, 23-25 Minna St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Metals Mfg. Co., 1300 N. Main st., Los Angeles.
Victory Mfg. Co., 423 Monadnock Bldg., San Francisco.
West Coast Porcelain Manufacturers, Rialto building, San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California street, San Francisco.

POWER PLANTS
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PRELIMINARY ESTIMATES AND VALUATIONS
Arthur Priddle, 185 Stevenson street, San Francisco.

PUBLIC QUANTITY SURVEY PLAN
Arthur Priddle, 185 Stevenson street, San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
California Hydraulic Engineering & Supply Co., 70 Fremont St., San Francisco.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

QUANTITY SURVEYOR FOR CONTRACTORS
Arthur Priddle, 185 Stevenson street, San Francisco.

RADIATOR TRAPS
C. A. Dunham Co., Sheldon Bldg., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Building, San Francisco.
Gunn, Carle & Co., Inc., 444 Market street, San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Truscon Steel Co., 527 10th St., San Francisco.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, 765 Mission street.

ROOFING CONTRACTORS
Bender Roofing Company, Monadnock Bldg., San Francisco.
National Roofing Company, Pacific Roofing Co., C. G. Williams, A. K. Goodmundson, 2140 San Pablo ave., Oakland.

ROOFING AND ROOFING MATERIALS
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

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Patterson – Newman
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Main Office and Yards:
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Phone Oakland 1820

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Lumber, Timber, Piles, Spars, etc.
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MILLWORK, SASH AND DOORS
Hardwood Interior Trim a Specialty
Main Office:
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SAN FRANCISCO, 177 Stevenson Street
OAKLAND, 1001 Franklin Street
LOS ANGELES, 908 Washington Building
SAN JOSE, 16 North First Street

When writing to Advertisers please mention this magazine.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SASH CORD
Samson Spot Sash Cord, John T. Rowntree, Pacific Coast Agent, San Francisco and Los Angeles.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Forderer Cornice Works, 269 Potrero ave., San Francisco.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SHINGLES—STONE
McClenahan Products Co., Inc., 112 Kearny St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

STATIONERY AND SUPPLIES
Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.
H. S. Crocker Co., 565 Market street, San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Union Construction Co., 604 Mission street, San Francisco, and Key Route Fell, Oakland.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL ROLLING DOORS
Pacific Building Materials Co., Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles. Waterhouse-Wilcox Co., San Francisco.
Rolph, Mills & Co., San Francisco, Los Angeles, Portland and Seattle.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.
Truscon Steel Company, 527 Tenth street, San Francisco.

STORE FRONTS
The Kawneer Manufacturing Company, West Berkeley, California.
Zouri Safety Sash Bars—Cobbledick-Kibbe Glass Company, 175 Jessie St., San Francisco.

STUDDING—FIREPROOF STEEL
Steel Studding Company, 1216 Folsom St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.
Western Electric Safety Switch Co., Inc., 247 Minna street, San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market street, San Francisco.
Rucker-Fuller Desk Co., 677 Mission street, San Francisco.

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission street, San Francisco.

MOLINE HEAT
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TELEPHONE SUTTER 3818

ROLPH, MILLS & CO.
SUTTER 1100
PACIFIC COAST AGENTS
149 CALIFORNIA ST.
SAN FRANCISCO
CORNELL STEEL ROLLING DOORS
SEATTLE
PORTLAND
LOS ANGELES

ARCHITECTS' SPECIFICATION INDEX—*Continued*

TILE FOR ROOFS
Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Sharon Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.

VALVES—PIPES AND FITTINGS
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
National Valve Company, 23-25 Minna St., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Co., 115 Mission St., San Francisco.
H. Mueller Mfg. Co., 635 Mission street, San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco
Shroeder Direct Flush Valves, mfrd. by Standard Metals Mfg. Co., 1300 N. Main street, Los Angeles.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.
Everlasting Blow-off Valves. General Machinery and Supply Co., 39 Stevenson street, San Francisco.

VARNISHES
Bass-Hueter Paint Company, Mission, near 4th street, San Francisco, and all principal coast cities.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, Rialto Building, San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Gunn, Carle & Co., Inc., "Hydrate," 444 Market street, San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.
Baird-Bailhache Co., 478 Sutter street, San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SASH CORD
Sampson Spot Cord, John T. Rowntree, Pacific Coast agents, San Francisco and Los Angeles.

WINDOW SHADES
National Window Shade Co., Inc., 244 Eddy Street, San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
The Kawneer Company, West Berkeley, California. (Simplex Fixtures.)
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FENCE
Standard Fence Co., 245 Market street, San Francisco; and 310 12th street, Oakland.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 827 Mission St., San Francisco.

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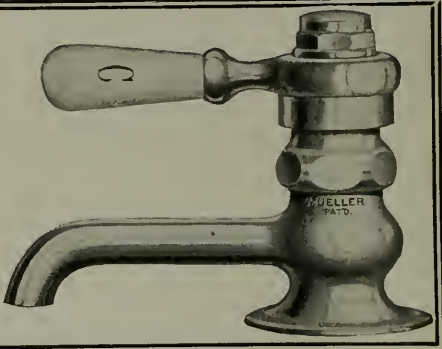

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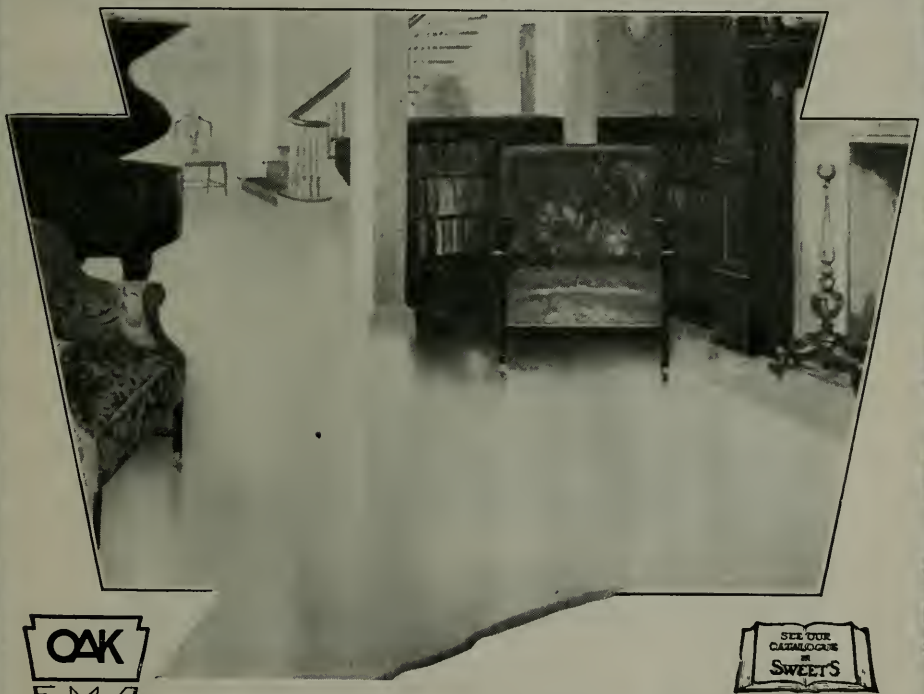

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When your client comes to sell or rent he will find this a clinching argument Any page of real estate ads shows how people value Oak Floors.

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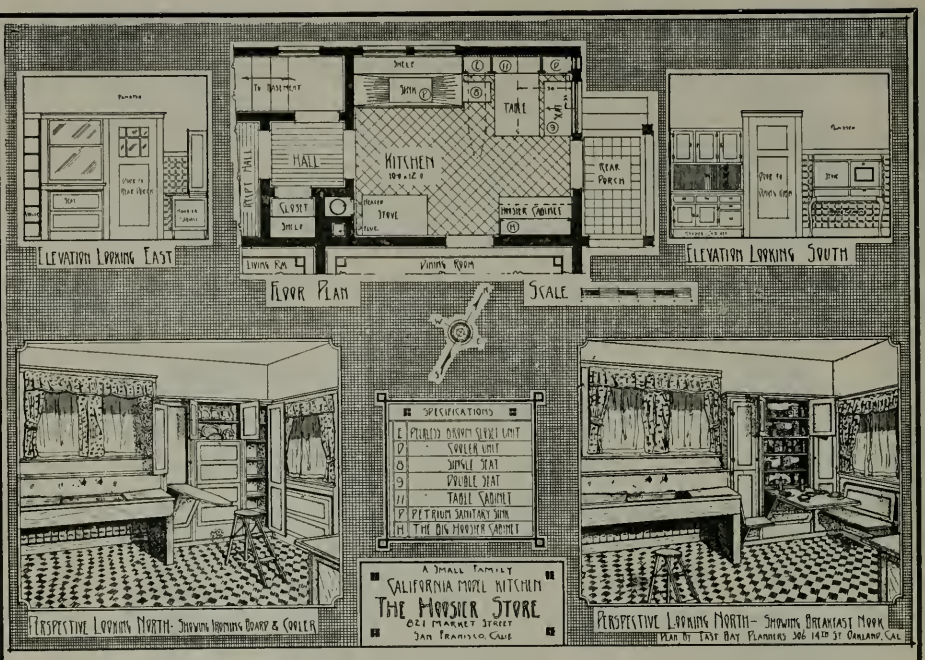

This kitchen commends itself-

on account of its simplicity—no offsets or irregular shapes—just a 10x12 kitchen. Breakfast nook arranged without alcove, contains table cabinet with 17½ ft. of shelf space. A single seat under end of sink, double seat under window, cooler; broom closet with ironing board which folds into front door—costs very little; ask us. Eliminates enough ordinary millwork to more than cover its cost. Note arrangement to save steps—Cabinet near nook, Stove near sink.

A full size model installation at our display rooms, which are available at all times to architects and their clients.

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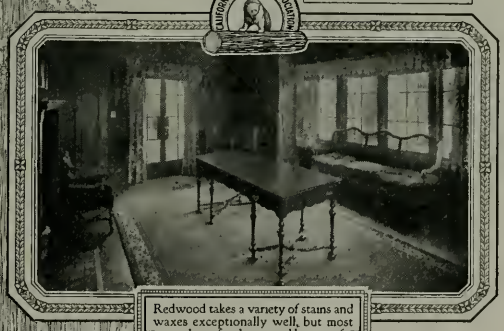
Ask your Architect—

Perhaps he is himself a Redwood enthusiast, who delights to work in this exceptionally rich and flexible medium. At any rate he—or your building contractor or lumber dealer—can readily procure for you complete information about this most interesting of woods.

Because of its beauty and variety of tone and grain and its easy workability, a growing proportion of the redwood cut is going into interior trim—mantels, mouldings, etc. Redwood is also well known, however, for its unequalled resistance to rot and fire—hence its extensive use for exterior trim, siding and shingles, and for tanks and other wood structures exposed to the weather or to moist earth.

Given the freedom which is a necessity for any artist if he is to do good work, your architect can achieve an unusual variety of beautiful effects in redwood, without unusual expense. Go to him, or to your building contractor or lumber dealer—and ask *"What about Redwood?"*

Redwood has no equal for the special uses to which it is adapted, and for these uses the available supply is adequate for generations. Meanwhile, according to U. S. Forest Service Bulletin 38, merchantable second growth redwood is produced in less than 60 years by natural growth from the stump.



Redwood takes a variety of stains and waxes exceptionally well, but most people prefer the natural beauty of the wood illustrated in this photograph

This advertisement is appearing in the July issue of Atlantic Monthly, Harpers, Scribners, Century, The Review of Reviews, World's Work and Sunset Magazine,

Playing Fair with The Building Trades

THIS advertisement is written with one purpose in mind: to send prospective homebuilders to their logical technical advisers—the architect, building contractor and lumber dealer—with a question: "What About Redwood?" In answering that question lies your opportunity to secure a client or a customer. Complete information, prices and specifications may be obtained by addressing any of the Redwood sales and distributing branches listed below:

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The Pacific Lumber Co. of Illinois, 522 Fifth Ave., New York City; Lumber Exchange Bldg., Chicago, Ill.
Union Lumber Company, Crocker Building, San Francisco, California; 2850 Grand Central Terminal Building, New York City.
C. A. Goodyear Lumber Company (agent). McCormack Bldg., Chicago, Ill.

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*Dolbeer & Carson Lumber Company
Glen Blair Lumber Company
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THE modern high school has been called the College of the People. Though it has English ancestry, it has become a dominantly American institution. Its walls recognize one pass-word, — the desire for an education.

EFFICIENTLY managed high schools are Community Centers, tentative Agricultural Colleges. No longer can high school buildings call their duty done, "when lessons have been heard."

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GLADDING, McBEAN & CO.

MANUFACTURERS CLAY PRODUCTS
CROCKER BUILDING, SAN FRANCISCO
WORKS, LINCOLN, CAL.

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EFFICIENCY COMBINED WITH LUXURY

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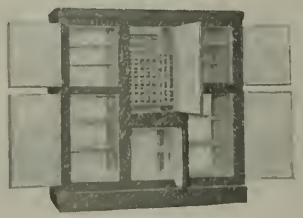

NOT ONLY MIXERS

but a full line of nationally-known equipment, as well.

We have prepared for a brisk building season.

"Get it from BACON"

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ARCHITECTS and engineers who conscientiously strive to give their clients satisfaction invariably choose Wayne equipment.

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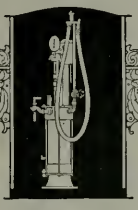

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Ft. Wayne, Ind.

San Francisco Office
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Phone Garfield 1350

Los Angeles Office
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Phone Main 1600

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After the failure of the original wheel hangers

Reliance-Grant Elevator Door Hangers

were placed in the following buildings:

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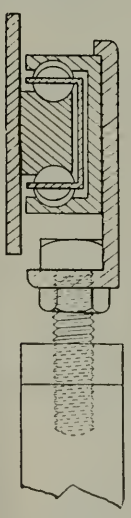
Kohl Bldg. ..... San Francisco
Realty Syndicate Bldg..... Oakland
Thayer Bldg. ..... Oakland
French Bank Bldg..... San Francisco
Plaza Hotel ..... San Francisco
Livingston Bros. ..... San Francisco
Federal Hotel ..... San Francisco
Western Sugar Co..... San Francisco
Hotel Land ..... Sacramento
Rowell Bldg. ..... Fresno
Physicians' Bldg. ..... Sacramento
New York Block..... Seattle

In all of these cases the saving of a few dollars in the cost of the original installation by the use of an inferior product proved in the end to have been a loss.



The cut at the side of this page illustrates a cross section of the Reliance-Grant Elevator Door Hanger, showing the solid milled sections and ball bearings which insure permanency and easy and noiseless operation. The Reliance Hanger is the only door hanger having solid milled ball races and any other hanger substituting pressed or rolled sections will chatter and be noisy, and any substitution for ball bearings will fail to stand the test of time.

MANUFACTURED BY

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Park Avenue and 40th Street, New York

PACIFIC COAST AGENTS

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Columbia Wire & Iron Works - - - - - - - Portland, Ore.
D. E. Fryer & Company - Seattle, Spokane, Tacoma, Wash., & Great Falls, Mont.

RICHARDS-WILCOX R-W AURORA TRADE MARK

RICHARDS-WILCOX R-W AURORA TRADE MARK

Architects who specify R-W AiR-WAY hardware for all multiple casement windows are saving the builder the usual difficulties of this important phase of construction, as well as making sure of a satisfied client.

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Richards-Wilcox Mfg. Co.
"A Hanger for any Door that Slides"
CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA — AURORA, ILLINOIS, U.S.A. — BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO — LONDON, ONT.

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HOSPITAL SIGNAL SYSTEMS
SAFE - SANE - SURE
CHICAGO SIGNAL CO.

GARNETT YOUNG and COMPANY
Pacific Coast Sales Engineers
612 Howard Street, San Francisco
SEATTLE LOS ANGELES PORTLAND

Pitcher Sliding Door in Living Room

Pitcher's Disappearing Doors

Adjustable Hangers and Frames meet the demand for Appearance, Quietness and Durability.

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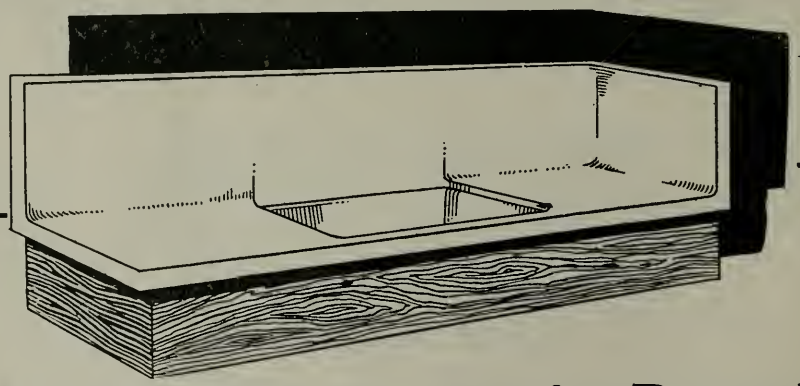

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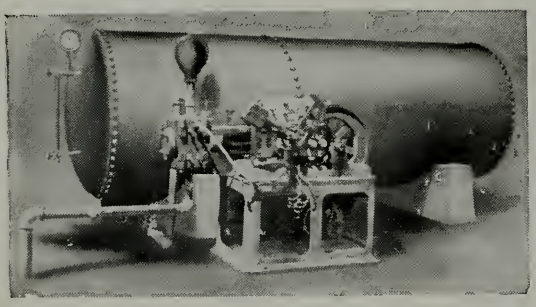

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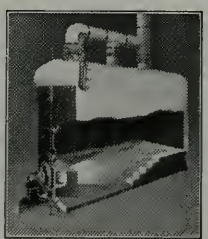

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THE ARCHITECT AND ENGINEER

JULY
1921

Vol. LXVI
No. 1

The New High School at Salinas

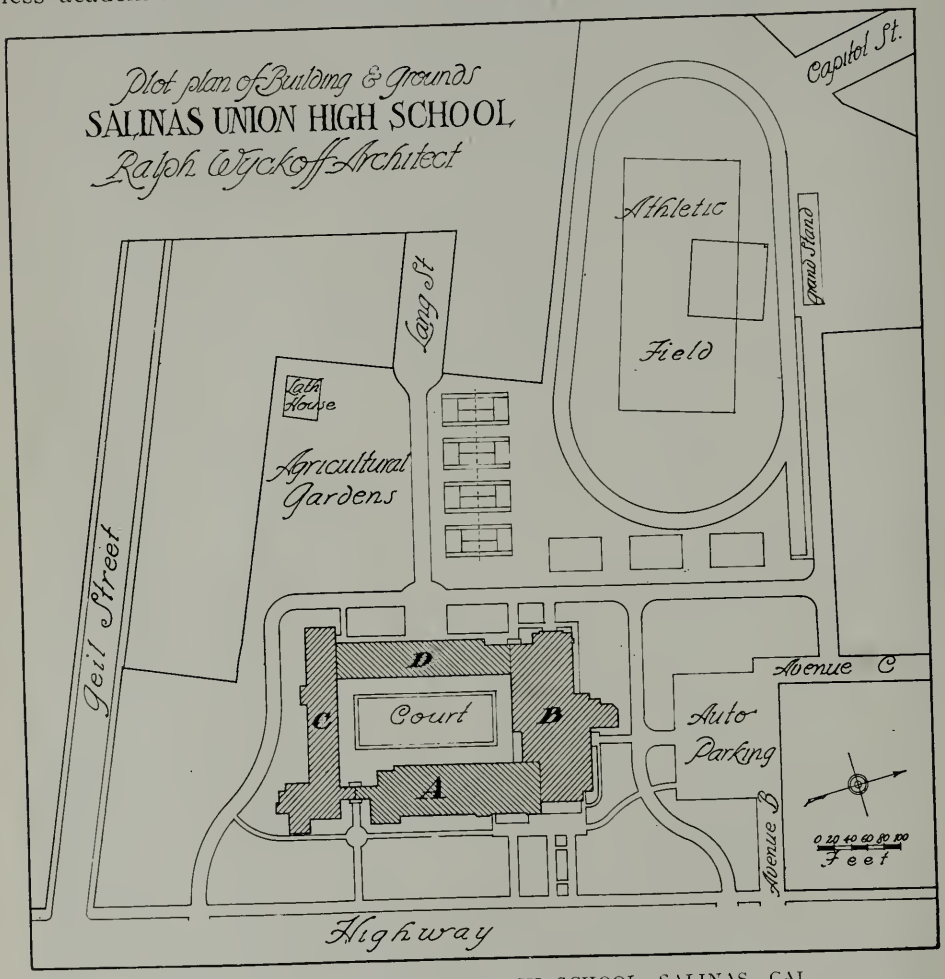
By IRVING F. MORROW

THE critic in a captious mood might enjoy an industrious half hour or so prodding about the new high school at Salinas after matter for criticism. And ample material could surely be brought to light. There is, for instance, the tower, which terminates somewhat inconclusively; the auditorium entrance, which appears a bit restricted; the relative inadequacy of the mass of the auditorium as a balance to the long arm of the building (a deficiency not entirely compensated even by its heightened scale and simplicity); and throughout the building a rather deliberate intent upon picturesqueness, which has not been concealed with entire success. These and other matters of greater or less import might be held up and gloated over.

Yet after full value has been credited to such objections and reservations, the fact remains that Mr. Wyckoff's building is one of the most interesting and worthy recent examples of our growing school architecture. If its faults are of the obvious kind which afford but limited satisfaction for their detection and enumeration, its merits are of the positive kind which provide genuine pleasure to professional and layman alike. It will undoubtedly become, if it has not already become, a popular building; and very rightly so. It exemplifies the type of architecture which identifies itself with the public consciousness. And this is something which can not be said of many a structure which, critically and technically considered, is a more consummate architectural achievement.

What does this mean? It means, in the fewest words, that the building accords with the habits of mind of its public. This fact condones many a minor fault of expression, because the subject presented is congenial. By this I do not intend to suggest that Mr. Wyckoff has either adopted the easy course of duplicating accepted solutions, or that he has played down to an unworthy popular taste. On the contrary, one of the very faults of his building is that its solicitude for individual distinction

often remains apparent—a condition invariably subversive of poise. But he has not attempted to impose ideas unacceptable to the conditions to be met, nor to use an idiom foreign to his audience. The critic may point out that subtlety has given way to exuberance, and that in places unity is almost compromised by variety of incident. These are more or less academic matters meaning little to the citizen at large. What im-



PLOT PLAN, SALINAS UNION HIGH SCHOOL, SALINAS, CAL.
Ralph Wyckoff, Architect

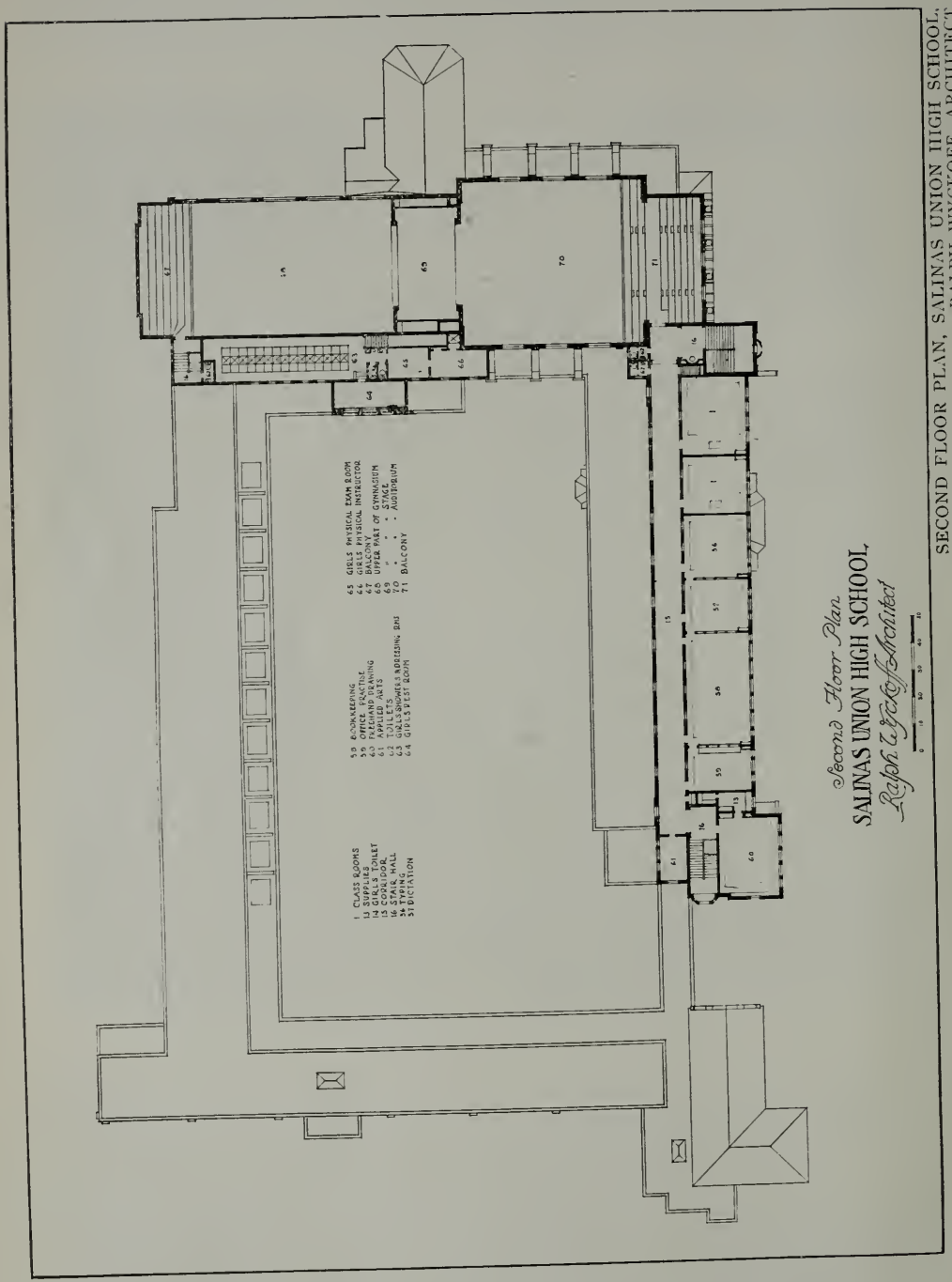
presses him is that the real intention of the building is never really in doubt, that it is nowhere uninteresting, and that it belongs most decisively where it stands. It is popular in the best sense of the word.

But it is more, despite the shortcomings which have been touched upon. The plan is well conceived and well worked out, both from the school man's and from the architect's points of view. The composition is always considered, and obvious in intent, even where not fully realized. The handling is lively and ingenious, never dull and never careless, even where a bit self conscious. After all allowances have been made, it remains a real achievement. Perhaps the dominant note is liberality. Few

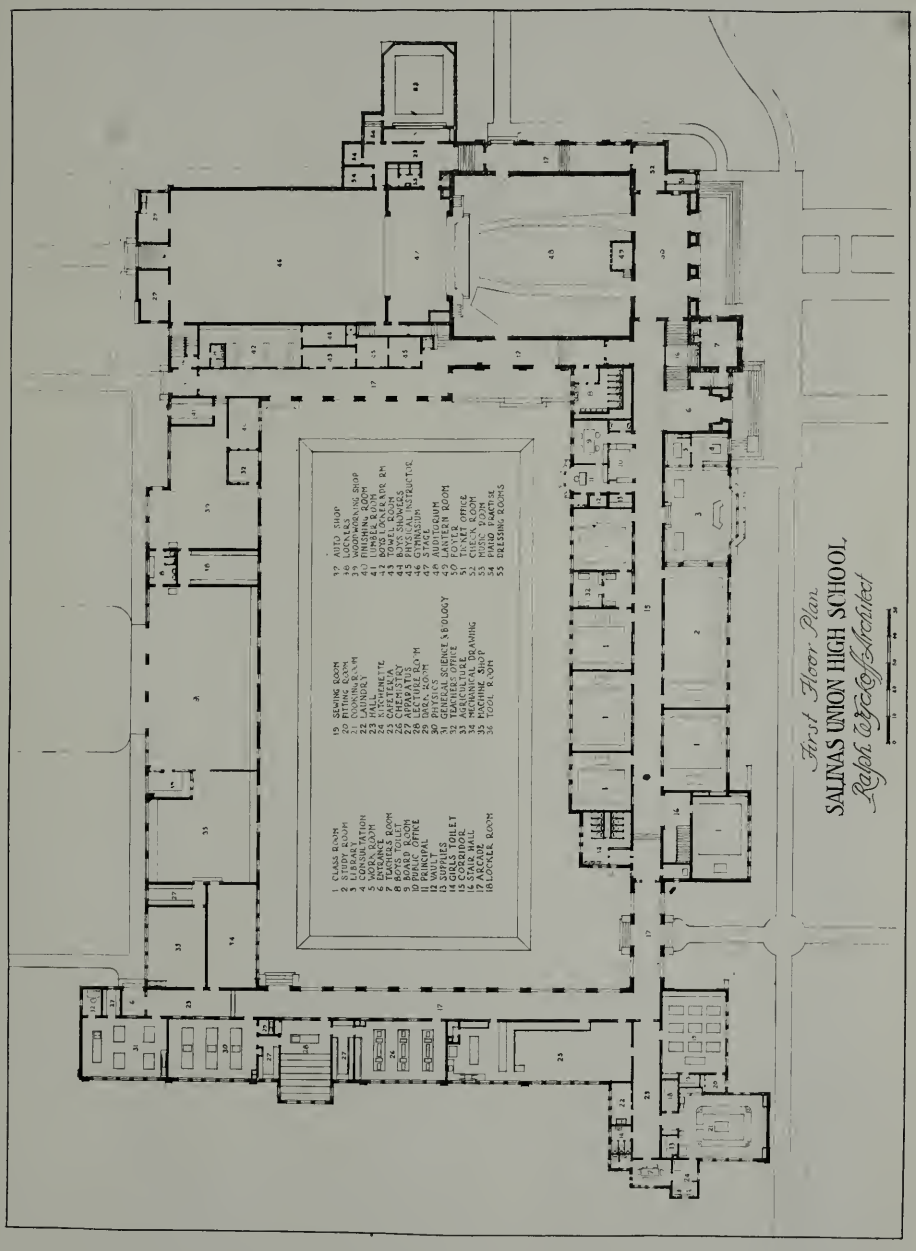
communities have been as liberal in the provision of ground and funds; few school architects have brought so liberal a fancy to play over their problems; and architects whose experience has included dealings with public bodies will appreciate the co-operation of a school board and a school department which must have maintained an unusually liberal attitude.

AUDITORIUM CLERESTORY, SALINAS UNION HIGH SCHOOL, SALINAS, CAL.
Ralph Wyckoff, Architect

In finish the plaster walls and the terra cotta ornament are of a warm buff color, and the roof is red tile. Planting has already been set out, but at least a spring's growth will be required before it can make itself felt. On the interior the treatment is simple, but happily avoids the poverty so characteristic of our school interiors. Main vestibule, library, and principal's office are finished in gum wood. Special attention has been given to the auditorium and its vestibule, and the stage has been provided with a permanent decorative setting which can be adapted to the various uses likely to be required of it.



SECOND FLOOR PLAN, SALINAS UNION HIGH SCHOOL.
SALINAS, CAL. RALPH WYCKOFF, ARCHITECT



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Ralph Wyckoff, Architect

Industrial Art — A Peace Emergency*

By RICHARD F. BACH
The Metropolitan Museum of Art

WE speak of morale in the open fighting field, we count upon the morale of those at home in the service of production and supply, yet we have never realized that this term must be applied to every line of effort that engages our minds and hands if the national cause is to be served—even to the arts of peace upon which the country must so largely depend in regaining its equilibrium and normal course of life now that the job over there is done. Have we ever considered the meaning of morale in the fine arts? In the maintenance of the fabric of national art impulse, in satisfaction, poise and peace of mind, the industrial arts serve among the greatest agencies of national progress; theirs is a serious undertaking, to maintain morale in the face of almost impossible conditions, not only as to labor and materials, but as to design and taste.

For the first time, during the war, the industrial arts manufacturing fields clearly saw that their own shortsightedness had brought them a most serious handicap. The machine had faithfully served them for many years, so faithfully indeed had it wrought their many forms and weaves that its owners had all but forgotten that the mechanism had no thoughts of its own. The war isolated the United States and we counted among our resources machines galore, fine raw materials, excellent technical ability, but no designers and inadequate schools to produce others to make good the shortage due to the occupation of Europeans in duties of belligerency. True values thus demonstrated the real position of the machine, not as a thinking automaton, but as a glorified tool which might be misused as readily as correctly applied. Manufacturers who had long had ugly presentiments as to what might happen if their industries should ever be isolated from European sources of supply as to design and taste, saw that the day had come too soon. They had never advanced any educational propaganda, they had helped to found no schools, they had seen for many years only the advantages of the present, they had not built for the future of American industrial art. While an American harvesting machine was a prize for the European, an American industrial art object, with few exceptions, remained little more than a near-barbaric curiosity.

But even yet the industrial arts manufacturers, the furniture and furnishing producers, have not made direct and general use of some of the most obvious and most immediately available advantages that could be offered to any branch of production. To be sure they have their problems of obtaining material, of holding labor to turn this over into executed pieces and, just now, chiefly of persuading middlemen to buy. But what has the manufacturer done in the field of design? Has he reached out for every possible avenue of assistance in the most important field of all, namely, that of improving the appearance and appeal of his pieces so that he may aid in building up the cultural standard of the nation? What has he done to improve the calibre of his designer? Has he considered the value of the possible trade mark: **Designed and made in the United States?** And finally, in the absence of schools for craftsmen—the woeful lack of which the war so plainly showed—has he made the museum collections in our great cities a part of his working plant? Has he ever calculated the asset value of the museum in his city as an inspiration, as a source of information for design and actual models, as a center for

*From the Bulletin of The Metropolitan Museum of Art.

study and research, in short, as an out-and-out working laboratory? It is safe to say that such a conception of the museum's function is a novel one from the average manufacturer's point of view. Now is the time for him to discover what the great collections throughout the country have to offer, what extensive arrangements have been made in the large museum to provide or make accessible the fine examples of the craftsmanship of other days. Now is his time to begin in a thorough-going way to make himself acquainted with the contents of these great galleries, with the finely organized resources for study—golden opportunities for his designers. There is but one demand upon his time, that of going to the museum; books he may have in his own office library, but the great collections of originals from which to inspire and model offer the resources of contour, color and depth which the finest engraving and measured drawing can but remotely suggest.

We can only repeat, there is nothing highfalutin about a museum. There is nothing difficult or far-fetched about an exhibition of originals. To be sure, they cannot be handled, they are housed in a splendid architectural monument worthy of them, they must be under guard, and they must be perhaps in a structure located in a public park requiring a ten minute trolly ride. But does all this mean that their great value must be ignored? Glass cases and guardians are unfortunate necessities, but so are the locks on our doors, safeguards to guarantee the continued value of objects within. It is the duty of all concerned with the industrial arts, but especially of those engaged in their manufacture and sale, to acquaint themselves with and make constant use of every facility which may improve American design, and the museum collections is the foremost of these facilities at the present time. Furthermore, the museum is bound to remain the foremost of these facilities for the reason that without its resources even the schools cannot perform.

Hitherto manufacturers have rarely seen the value of taste as an asset; they have regarded their factory merely as a business venture, not as a workbench of national taste. They have not realized that every chair or lighting fixture or tile or yard of goods is a factor in the great mosaic of national culture in the industrial arts. The museum stands ready to help them to a better understanding not as a patron, not as a big brother, but as a partner in progress. Splendid things have been brought together and made available, lending collections have been prepared, photographs are available, large access may be had to the finest facilities in the way of fundamental inspiration and sympathetic help that ever have been extended to craftsmen and designers and manufacturers. These resources are ready to use, there is no red tape, there is no air of "institutionalism" and awe; there is only the desire to cooperate, to help, for the museum cherishes the highest ideals for the advance of American design. The museum maintains that "good enough" is no slogan for American manufacturers in the industrial arts. The museum maintains that **Made in America** on an object of furniture or furnishings is inadequate unless it also connotes **designed by an American-trained artist.** Above all, the museum has watched the growth of public taste among us, it has seen this taste gradually gain headway and outstrip the design quality of the manufacturer's output, and it has seen many a manufacturer make the discovery that what is easiest to get is not the best.

What will the manufacturer do to assure the progress of America along steady lines of cultural growth? Will he persist in the all-for-business course of quick turnover, or will he bend every effort to achieve

the finest design the world has ever seen, because for America only the best is good enough. Like many others whom the course of events has taken aback, the manufacturers had learned that preparedness is the longest word in the dictionary, but it is not too late for him to make a bold effort to profit by the present position of the United States in the industrial arts. A direct aid is offered him in the Metropolitan Museum. An immediate effort can be and surely must be made to establish Americanism in design, to achieve that new craftsmanship which shall form part of the cultural heritage of the United States. There is no time like the present to take stock of facilities to hand.

* * *

Rents Increased Over 50% Since War Began

THE Bureau of Labor Statistics reports that the average increase in rentals in the United States from 1913 to December, 1920, was 51.1 per cent. During that period the statistics show that the cost of food increased an average of 78 per cent, clothing 158.5 per cent, fuel and light 94.9 per cent, furniture and furnishings 185.4 per cent, and miscellaneous items 108.2 per cent. The average rental cost during that period was 3.4 per cent of the total living cost.

In getting together its data on rentals, the Bureau of Labor Statistics secured figures for from 200 to 500 houses and apartments in each city covered by the reports. A total of 32 cities, North, South, East and West, are covered in the Bureau's statistics, thus presenting a comprehensive review of the situation throughout the United States.

The Record and Guide, of New York, has prepared in tabulated form the Bureau's statistics on the rental situation, and the table is shown below. The statistics show that in 17 of the 32 cities the percentage of increase in rentals has been greater than in New York City. In the metropolis, in December, 1920, rentals showed an increase of 38.1 per cent over December, 1914, but this increase, as will be seen by reference to the Bureau's statistics, was much less than the increases in Baltimore ,Buffalo, Chicago, Cleveland, Detroit, Los Angeles, Mobile, Norfolk, Savannah, Seattle, St. Louis, and other cities.

Government Statistics From Thirty-two Cities in All Sections of the Country Show That Average Living Costs Rose Higher Than Rentals

City	Per Cent of Rent in Tot. Living Expenses	Per Cent of Rent Increase from December, 1914, to					
		Dec., 1917	Dec., 1918	June, 1919	Dec., 1919	June, 1920	Dec., 1920
New York City	14.3	2.6	6.5	13.4	23.4	32.4	38.1
Baltimore	14.0	3.0	13.8	16.8	25.8	41.6	49.5
Boston	12.8	*.1	2.8	5.1	12.2	16.2	25.8
Buffalo	15.4	9.4	20.7	28.0	29.0	46.6	48.5
Chicago	14.9	1.4	2.6	8.0	14.0	35.1	48.9
Cleveland	16.4	11.3	16.5	21.8	39.9	47.3	80.0
Detroit	17.5	32.6	39.0	45.2	60.2	68.8	108.1
Houston	13.2	*7.7	*1.7	1.9	13.4	25.3	35.1
Jacksonville	12.3	*18.7	5.9	9.7	22.0	28.9	34.1
Los Angeles	13.4	*.6	4.4	8.7	26.8	42.6	71.4
Mobile	10.3	*3.6	11.2	11.9	29.6	34.6	53.6
Norfolk	11.8	*1.7	39.0	46.5	63.3	70.8	90.8
Philadelphia	13.2	2.6	8.0	11.3	16.7	28.6	38.0
Portland, Maine	12.4	2.4	2.5	5.7	10.7	14.5	20.0
Portland, Ore.	12.8	*22.2	12.3	20.2	27.7	33.2	36.9
San Francisco and Oakland	14.8	*4.0	*3.9	*3.5	4.7	9.4	15.0
Savannah	12.9	*4.3	5.9	10.8	22.0	33.5	58.6
Seattle	15.4	*.6	44.3	51.5	71.5	74.8	76.7
Washington	13.4	*3.4	*1.5	*1.4	5.4	15.6	24.7
		Per Cent of Rent Increase from December, 1917, to					
			Dec., 1918	June, 1919	Dec., 1919	June, 1920	Dec., 1920
Minneapolis	16.8	....	*.1	*2.0	8.0	10.7	36.8
New Orleans	12.0	....	†	.1	10.8	12.9	39.7
Pittsburgh	14.5	....	7.6	13.5	15.5	34.9	35.0
Richmond	10.5	....	1.0	3.6	9.8	12.5	25.9
St. Louis	13.4	....	2.7	3.8	16.8	29.8	42.4
Scranton	10.9	....	.5	6.2	2.4	17.2	18.5
Atlanta	10.4	....	14.0	14.5	32.6	40.4	73.1
Birmingham	12.2	....	8.1	12.8	34.9	40.3	68.5
Cincinnati	14.4	....	.2	.8	12.8	13.6	25.0
Denver	12.0	....	12.8	21.8	33.5	51.9	69.8
Indianapolis	13.1	....	1.6	2.6	11.6	18.9	32.9
Kansas City	13.6	....	5.4	6.7	26.0	29.4	63.9
Memphis	13.5	....	†	8.2	23.1	35.9	66.2

*Decrease. †No change.

AUDITORIUM AND CLUB HOUSE FOR GOLDEN GATE POST, AMERICAN LEGION, SAN FRANCISCO — MORROW & GARREN, ARCHITECTS

The Arizona-Soñora Chain of Missions*

By PRENTICE DUELL, A. M.†

I. THE MISSIONS OF ARIZONA

IN studying the Arizona-Soñora chain of missions, we are considering the finest examples in mission architecture and at the same time delving into a history which is appalling in its sinister story of heroic martyrdom. The chain has been aptly called the "Way of the Martyrs." Every mission in Arizona suffered destruction two or more times and of the twenty missions and visitas which are recorded in Arizona alone, less than half of that number can be located, and all save one, are in ruins. Fortunately, most of the missions in Soñora are in good repair and continue to serve the purpose for which they were built.

Mission architecture is often spoken of disparagingly, almost apologetically, due probably to many bad copies which have been done during the last few years; and it remained for a casual observer to remark that "all missions look alike, in that they bear the stamp of neglect."

Nevertheless, in spite of what might be said to the contrary, the various chains of missions throughout the Southwest are quite different. In each instance they were built by different groups of padres, and there was no architectural program to follow. No precedent had been set and full scope was given to the imagination. Such broad specifications might have been the undoing of more ambitious builders, but it is to the everlasting credit of the padres that they did not strive to do something original and that they merely expressed in the simplest and best way the problem at hand. To be sure, they did their best to emulate the rich architectural heritage of their native land, but they readily adapted the designs to the conditions of the new country, besides simplifying the architecture to the ability of the Indian workman.

The Indian played no small part in building the missions. Already, the Aztec of Mexico had stamped upon the Spanish invader his love for bizarre color; it remained for the Indian of the desert to incorporate in the missions the architectural *motifs* of the desert itself which one so keenly feels in his terraced cities of Arizona and New Mexico. Thus, the regal arts of Europe were made to conform to the exigencies of a new world, and to an aboriginal tradition was added the grace and beauty of the 17th century as exemplified by the teaching of the padres. A new architecture was unconsciously created—a curiosity perhaps, but nevertheless, a style with vast possibilities, had it not been stopped at the very time it was taking serious form. It remains the only style developed in this country and by the same token, the Southwest is the classic ground of American architecture.

It is well that San Xavier del Bac is the first mission of the Arizona-Soñora chain which we shall consider. The general opinion among architects is that of all the missions it is the finest—at least, no other mission was carried to such a state of perfection. Evidently the church was designed

*EDITOR'S NOTE—The Arizona-Soñora chain of missions begins with Nuestra Señora de Los Dolores at Dolores, Mexico, and ends with San Xavier del Bac, near Tucson, Arizona. This chain is unique in that it was begun by the Jesuits under Father Kino in 1687 and built by them until 1768 when the Order was banished from Spanish possessions by decree of the King. This is practically the only field, excepting Lower California, in which the Jesuits labored. The Franciscans then took over the abandoned missions, building new ones and remodeling the old until 1810, at which time mission history closes.

These articles on the Arizona-Soñora missions will appear in three installments, the first taking up the missions of Arizona and the other two those of Soñora.

†Author of "Mission Architecture"; "The Old Spanish Trails of Mexico," etc. Measured drawings copyrighted by the author.

by a trained architect, which becomes all the more apparent when one begins making measured drawings of the elevations and sections. The name of the architect has been lost, but it might have been he who carved the name Pedro Bojorques on one of the sacristal doors in the year 1797, a date which corresponds to that of the final dedication of the church.

There is but one instance among the missions where the name of an architect, not connected with the priesthood, has come down to us. It is

NAVE OF SAN JOSE DE TUMACACORI, ARIZONA

that of Huicar, architect of the Mission San José de Aguayo of Texas, second only to San Xavier in excellence. The highly decorative entrance and chapel window, both deserving the praise given them by connoisseurs, were carved by his own hand and represent the finest Spanish carving in this country. It might not be amiss to mention here San Luis Rey of California, the third great example of mission architecture, and its architect, Father Peyri, the padre in charge. In his youth he studied archi-

tecture, but abandoned the profession for the monastic Order, little dreaming that the sacrifice of his career would, in the end, bring him a commission of such proportion as rarely comes to an architect. Here he was given the opportunity to build whatever he wished and to exert his imagination *ad infinitum*. His conception of San Luis Rey was magnificent, but one feels that he was not fully equal to it as an architect.

There is no doubt, however, about the harmonious unity and perfection

GABLE OF MAIN FACADE, SAN XAVIER DEL BAC, ARIZONA

of San Xavier. Viewing the church from across the desert, one is especially impressed by the beauty of the ensemble and its silhouette against the sky. The two plain towers on either side of the highly ornate, gabled entrance, emphasize the vivid color and deep shadows of the ornament, while above, the towers and broken gable form an interesting frame for the noble dome rising beyond. At one time the dome was painted to resemble tile, an art which the Moors in Spain borrowed from the subjugated Persians.

The windows and doors of the facade are symmetrically placed and thrown wholly in shadow by the deep reveal of the walls. Their blackness, contrasted with the whiteness of the walls themselves and the vivid ornamentation about the entrance, make a striking picture against the sky and desert, emphasized all the more by the anomaly of this magnificent cathedral in the midst of a desolate wilderness.

The ornamental gable about the entrance of San Xavier is the best example among the missions of that highly ornate decoration which came into Spain with the Renaissance. Mass rather than detail was emphasized, the decoration being confined generally to the entrance, and, to some extent, to the windows, while the walls were left strikingly blank. It has been called Plateresque, or the style of the silversmiths, for it does resemble such work in its feeling of chiselled elaboration. Much has been said for and against this style, but here the workmanship is exquisite and highly grace-

MORTUARY CHAPEL, SAN JOSE DE TUMACACORI, ARIZONA

tul. Arabesques in low relief flow over a flat field, and on either side of the entrance rise two vertical and fanciful columns of Moorish influence, the middle ones supporting the broken arch.

The decoration for the most part is symbolic. In the center of the pattern the coat-of-arms of the Order of St. Francis of Assisi is conspicuous. It consists of an escutcheon with a white ground on which is displayed a twisted cord (a mark of the Franciscan dress) and a cross on which are nailed one arm of our Savior and one of St. Francis. The arm of the Christ is bare, while that of St. Francis is covered, the meaning to be inferred is the union of the Divine Master and the disciple in charity and in suffering. To the right of the escutcheon is the monogram of Jesus, the Savior of men, and to the left that of the Blessed Virgin. Two ornamental bunches of grapes in the upper decoration signify the land of plenty and two small lions on either side, a symbol used throughout the building, represent the Lions of Castile. The several parts of the decorative scheme

are woven together by a graceful wheat-stalk pattern which, along with the bunches of grapes, signify the bread and wine of the Sacrament. The same decoration is employed on the main altar. Surmounting the broken gable is what remains of a life sized bust of St. Francis of Assisi, but it has long stood an indistinguishable cone of plastered brick with only tradition to name it.

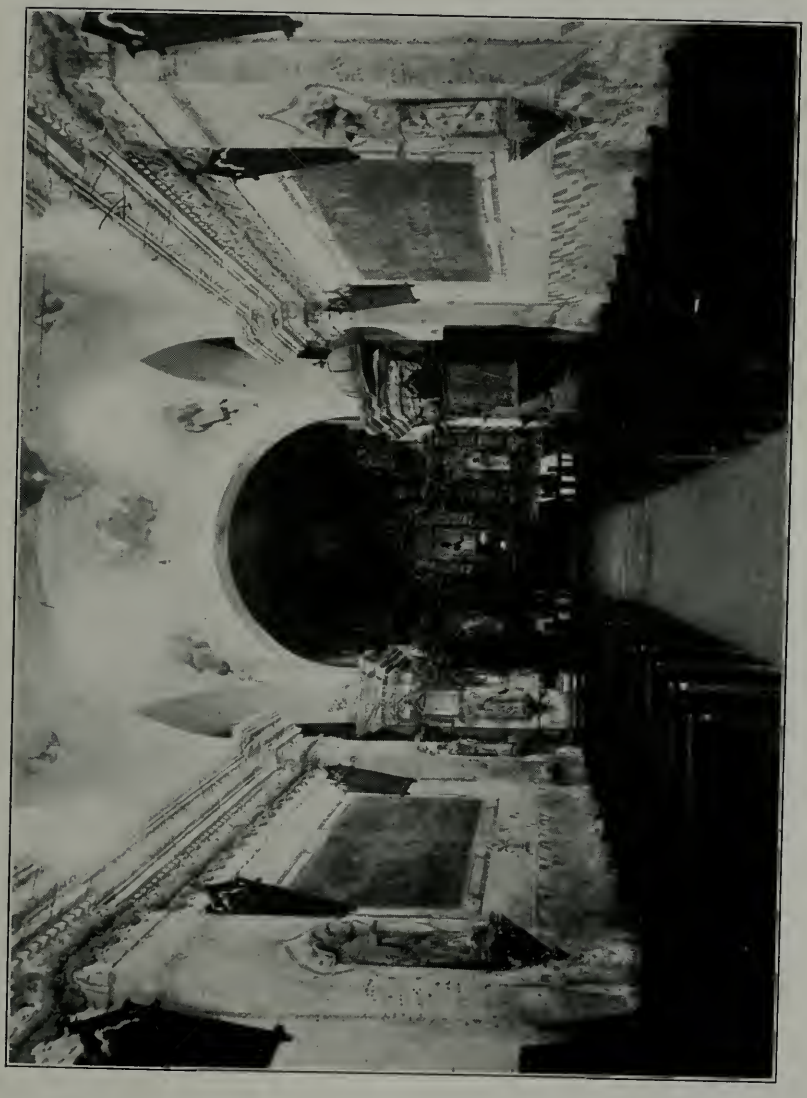
To the right of the church is the *campo-santo* and the mortuary chapel, one of the most delightful bits of mission architecture. To the left of the church extends the monastery buildings or residence of the priests. A high, defensive wall enclosed the area to the rear of the church and it was here the Indians worked at various handicrafts under the guidance of the padres.

DRUM AND DOME, SAN XAVIER DEL BAC, ARIZONA

The unfinished tower of the church has always been a source of conjecture and many legends have been woven around it. However, some research of late has brought forth an interesting story in connection with it. Seemingly, the church was complete save this one cupola. The architect had mounted the tower to begin the work when he lost his balance and fell to the tiled pavement below. He died soon after and the work was never touched again. It is probable that the architect intended to build this cupola himself since the opposite one, undoubtedly done by an Indian, is rather awkwardly made and the surmounting lantern has two extra sides.

When one enters from the bright sunlight outside into the cold, bluish twilight of the great vault, it is some moments before one's eyes can follow the form of the walls. The air is laden with the incense of years and a

APSE AND CHAPEL, SAN XAVIER DEL BAC, ARIZONA



NAVE, SAN XAVIER DEL BAC, ARIZONA

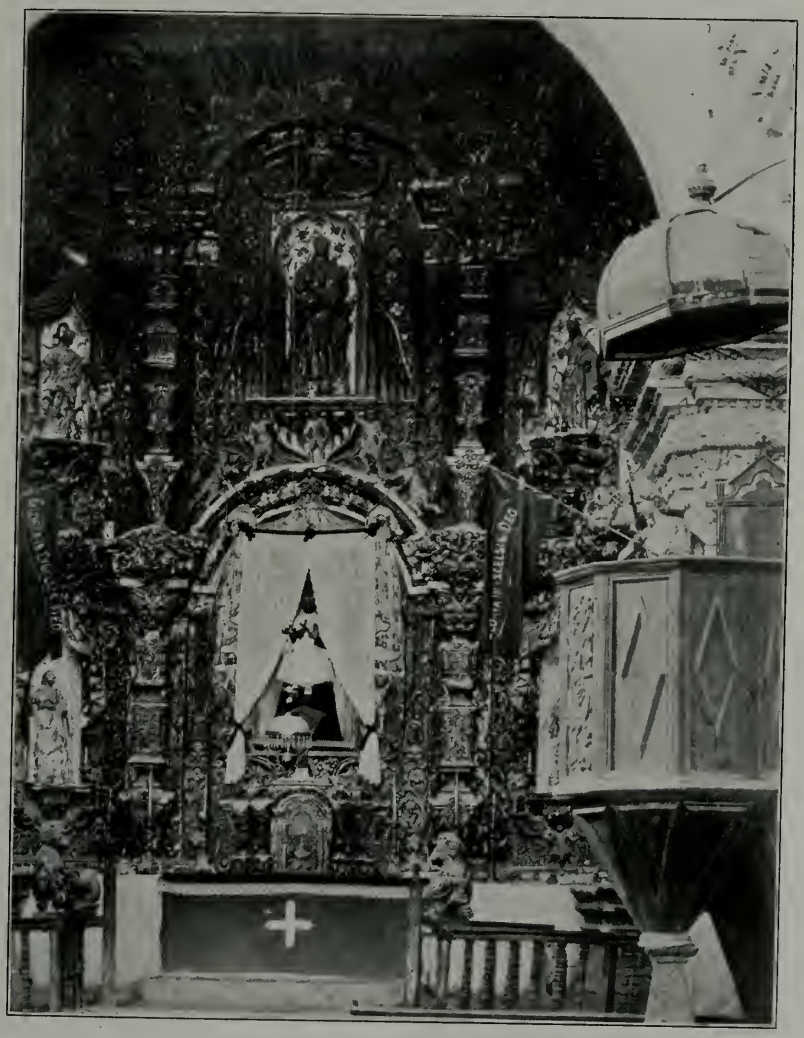
narrow ray of light, coming diagonally from one of the Moorish windows above, casts a phosphoric gleam on the crucifix of the altar. As one's eyes gradually become accustomed to the light, the remains of a mass of decoration grow evident that once must have been brilliant in the extreme. The main altar was almost entirely covered with gold leaf, and it appears

SAN JOSE DE TUMACACORI, ARIZONA, IN 1880

that the elliptical vaults of the ceiling were covered likewise. Every bit of wall space bears symbolic decoration. The frescoes, taking the place of the mosaics of the East, are placed as consecutive chapters of the Biblical story, and the statues almost complete the hagiology.

The frescoes have real merit and tradition relates that they were done by an artistic monk of the college of Queretáro, who was the pupil of

Francisco Eduardo de Tresfuérras, the "Michael Angelo of Mexico." The subjects are treated rather conventionally and show that the artist was well acquainted with many of the masterpieces of Europe. These faded frescoes have always been highly praised by modern artists, probably because they exist for the most part in one's imagination. It is true, however,

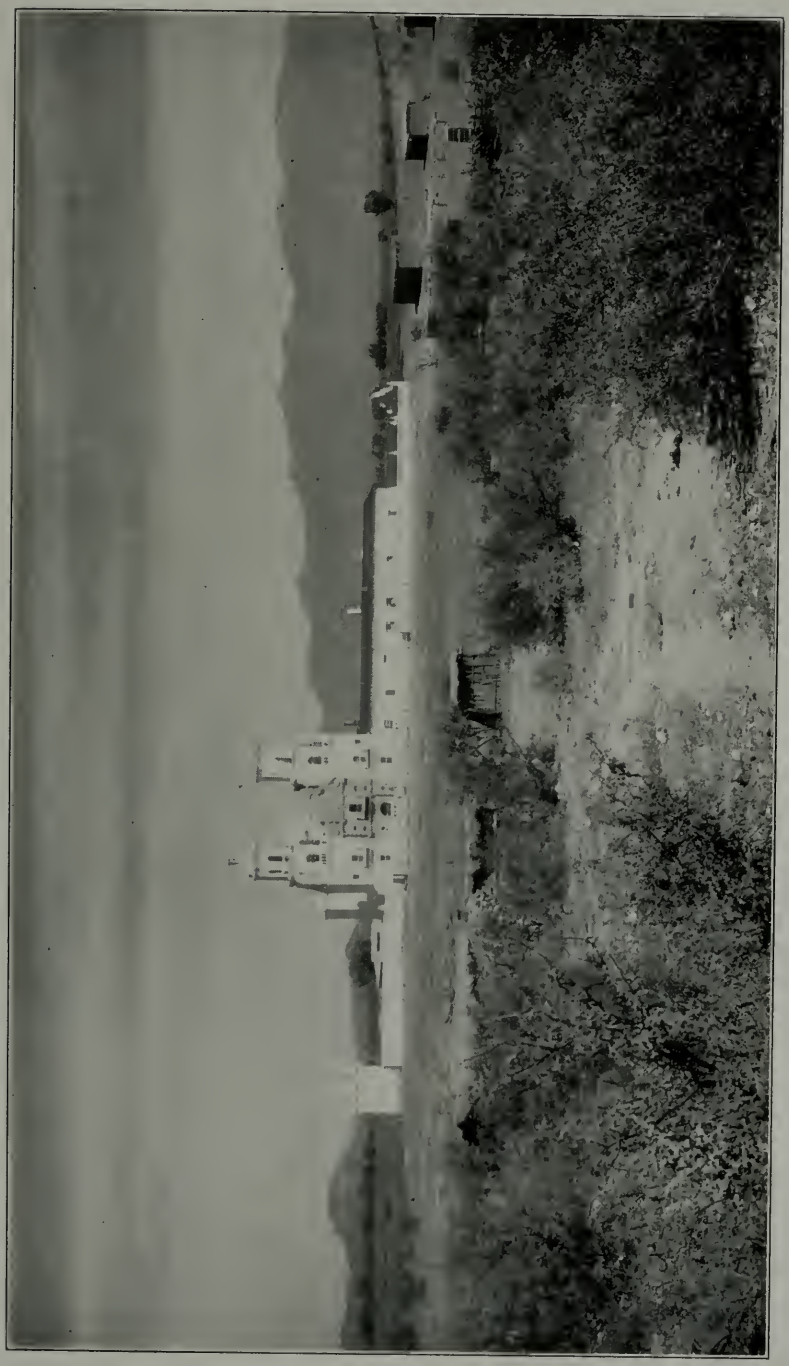


MAIN ALTAR, SAN XAVIER DEL BAC, ARIZONA

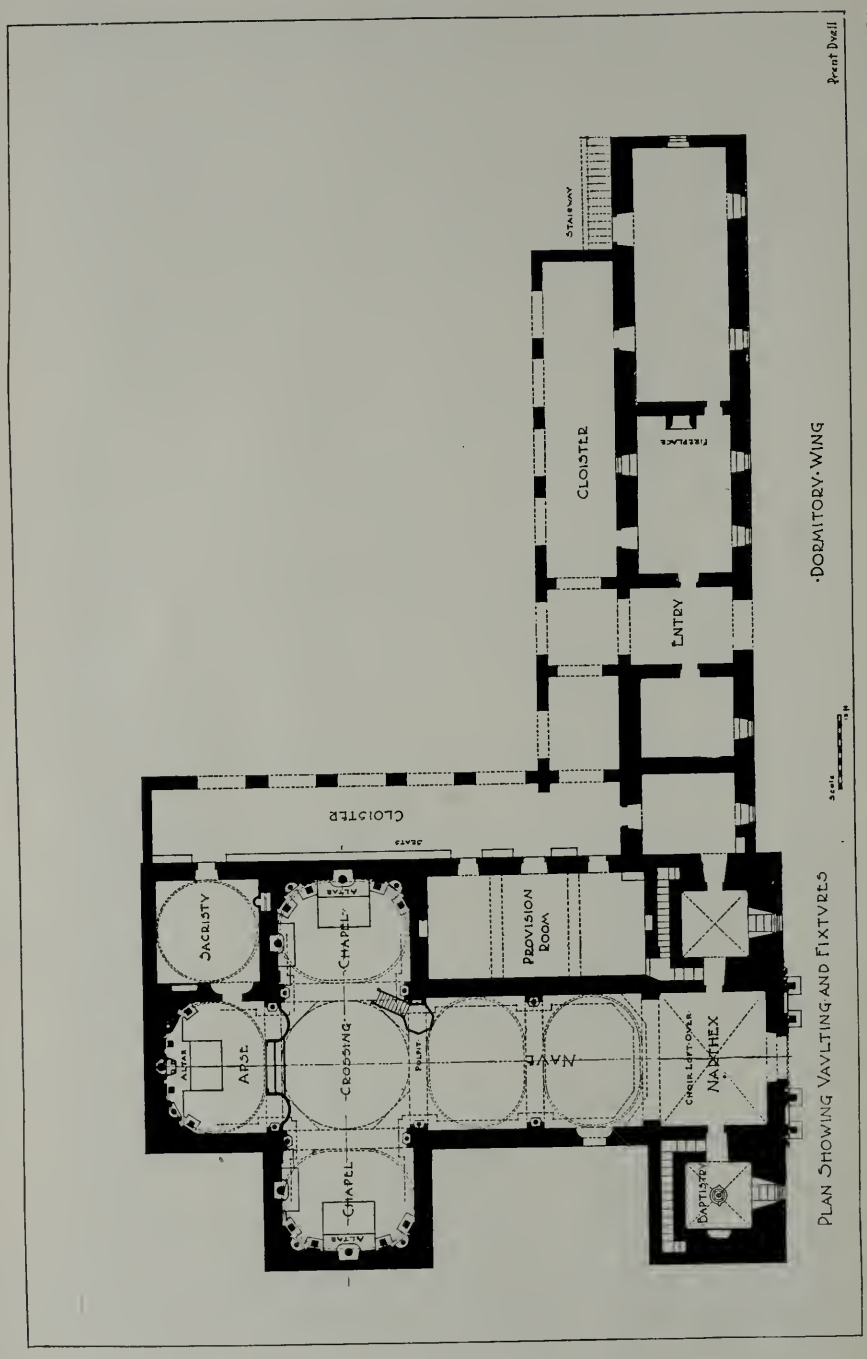
that many fine pictures were brought from Europe to hang in the missions and undoubtedly some of the un-named pictures seen today in the missions of Mexico were painted by Murillo and other prominent artists.

The statues are exquisitely carved and the faces, devoid of expression, bear the same unhappy look characteristic of the frescoes. After the Spanish fashion, the figures are clothed in gorgeous costumes. These garments

SAN XAVIER DEL BAC, ARIZONA



SAN XAVIER DEL BAC, ARIZONA



PLAN SHOWING VAULTING AND FIXTURES

PLAN OF SAN XAVIER DEL BAC, ARIZONA

were given as offerings by the Mexicans and Indians, often representing their dearest possessions. All is touched by a certain naïvete and childish simplicity. After all, the church was built for the Indian and his first lessons in Christianity were through art.

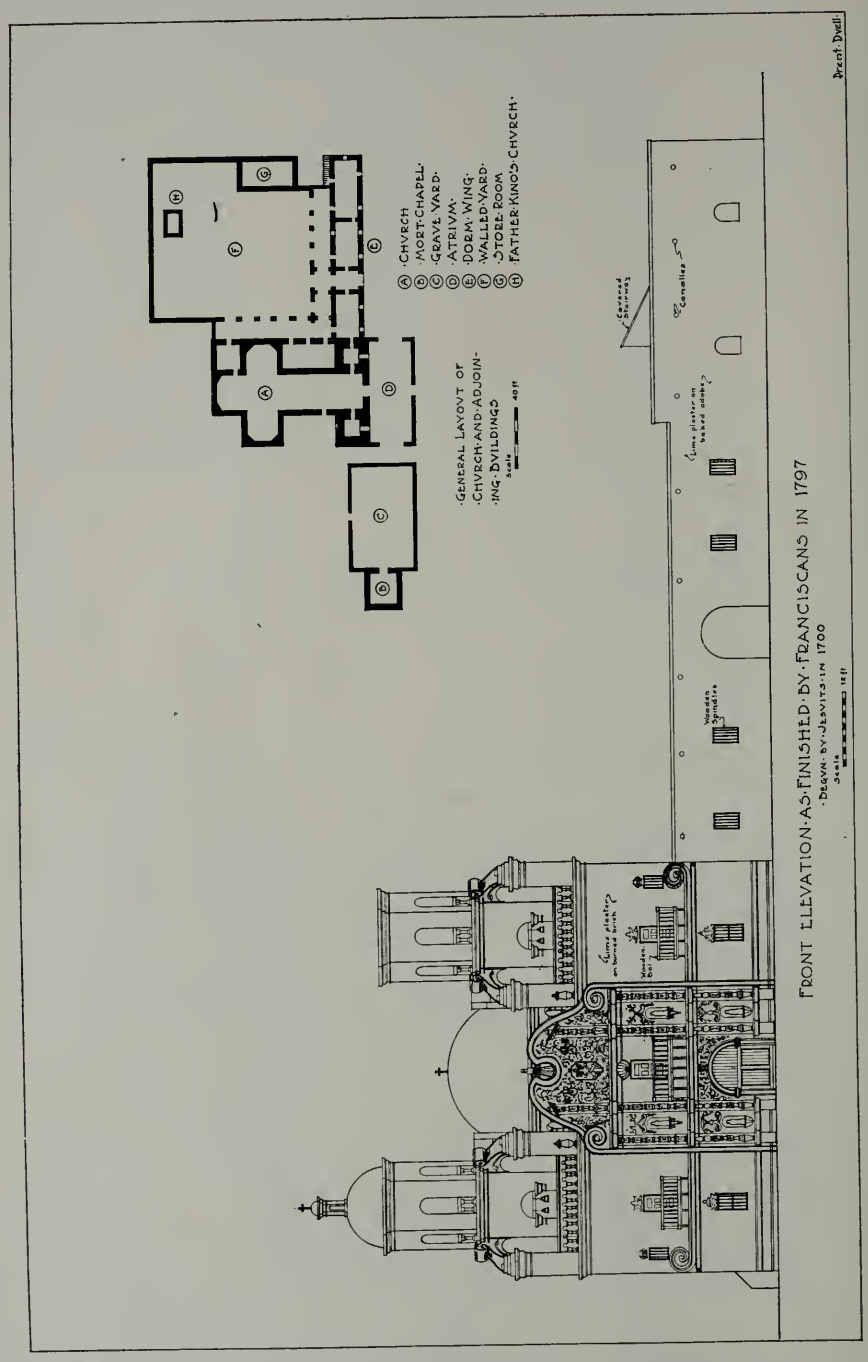
As a whole, the church is constructed of burned brick, even to the upper floors and roof. The walls are solid masonary and an average of six feet thick. In such walls it is obvious that both windows and doors would have deep recesses; consequently, as the sun's rays beat down and through these openings, the direct ray always falls on the side of the recess and only its reflection enters the room. In this way, practically the same amount of light minus the heat is obtained.

The construction throughout the mission is very commendable and the brick work stands unsurpassed today. The roof is built in the form of six low vaults about the large drum over the crossing, and the great dome above, constructed wholly of brick, seems to have been laid up without centerings. The foundation of the church is of boulders embedded in a sort of cement mixture and averages two feet above the grade, beginning, probably about five feet below the surface of the ground. The stones vary from three inches to twelve in diameter and were brought from the mountains about ten miles away—a task usually assigned to the women.

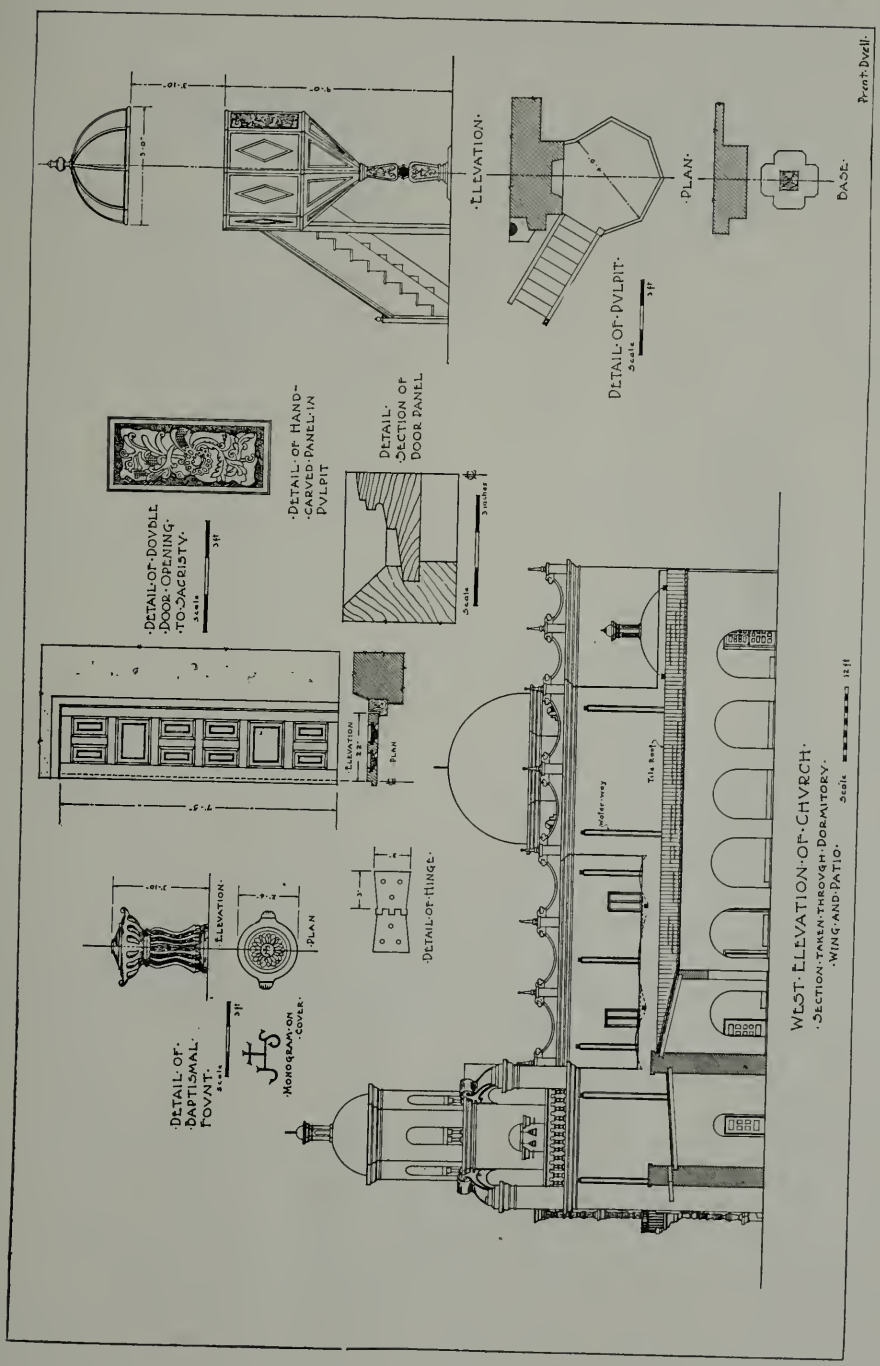
The only other mission of architectural importance in Arizona is San José de Tumacacóri. In spite of its faulty and almost primitive construction, the church holds a high place among missions as an architectural monument. The general appearance is good, impressing one with its feeling of solidity and strength, due to the skillful handling of large masses of wall area and unbroken lines. The lower part of the structure is made of semi-baked adobe bricks or rather blocks, supporting a square belfry at the left of the entrance, which is laid up with an excellent hard-baked brick. The brick above served as a protection for the softer adobe wall beneath.

Though the roof of Tumacacóri has fallen in it is quite evident that it was flat and supported by heavy beams. The great circular dome rising over the altar is still in good condition, but is a rather inartistic achievement; the surmounting lantern, however, is beautiful. In the nave, and especially in the apse and dome are the remains of a decoration which would excel that of all other missions in refinement of line and subtlety of color. Passing through the adjoining sacristy into the garden one finds the remains of a luxuriant verdure equaled only by that of the Mission Santa Barbara of California. From the wall of the church projected great beams, forming a long pergola, over which grew grape vines, the grapes from which supplied wine for the service. The wall itself was studded with bits of black and red rock arranged in simple, geometric patterns. The circular mortuary chapel standing farther back in the yard vied with the church in brilliancy; for its walls also were a mass of inserted bits of stone, red only, but with no attempt at design. In these instances the influence of the Moor is again felt, recalling his abstract decoration in glazed tile.

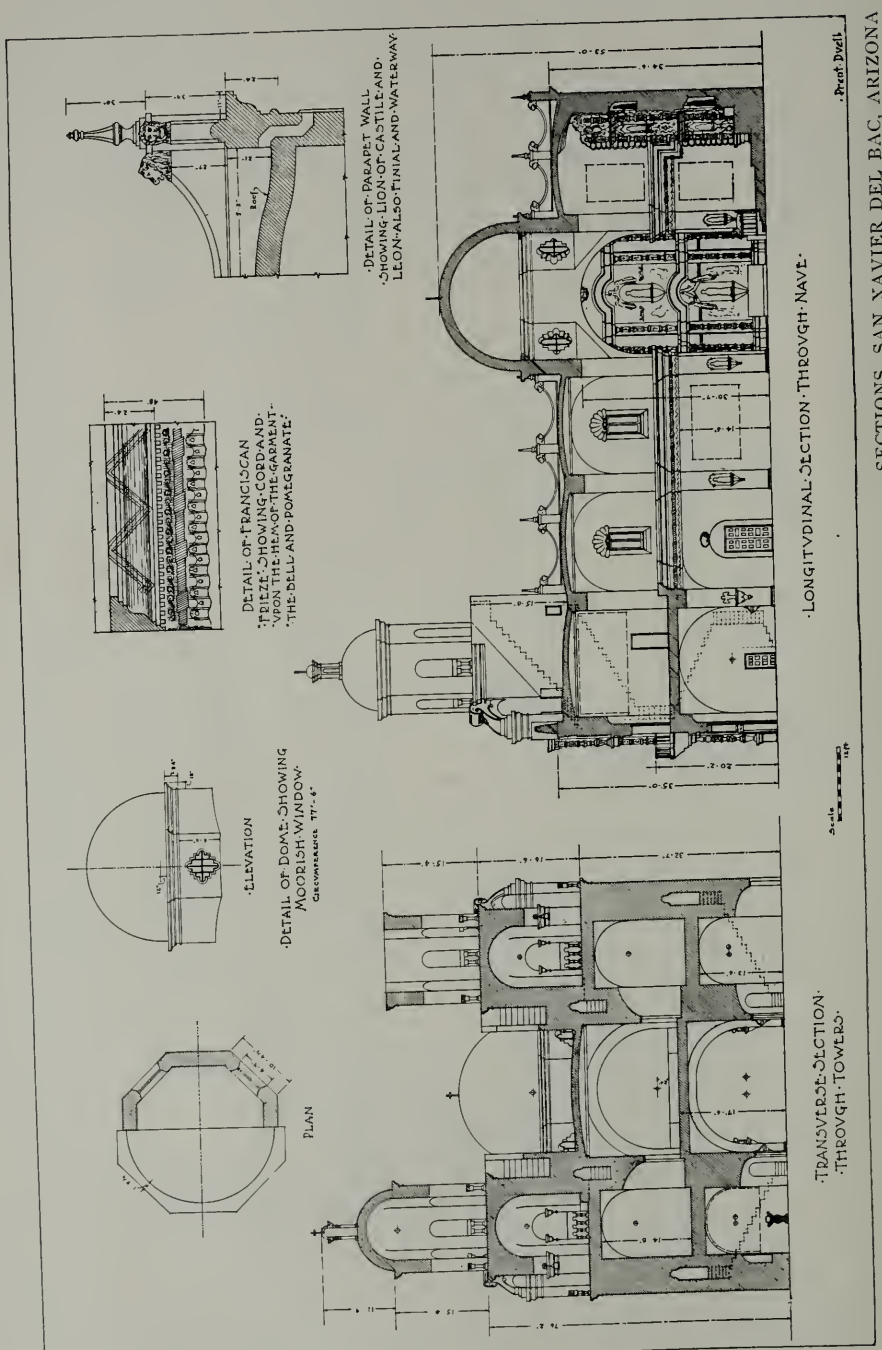
The few remaining missions in Arizona have no architectural interest, and are, for the most part, so fallen to ruin that measured drawings of them would be impossible. San Gabriel del Guevavi, near the border of Mexico, and San José del Tucson, the visíta of San Xavier near Tucson, Arizona, played a prominent part in mission history, but today nothing more than a few walls mark their location. However, the preserving of San Xavier del Bac almost makes amends for the neglect of the smaller churches. Recently the United States Government took over San José de Tumacacóri as a National Park and steps are now being taken for its protection.



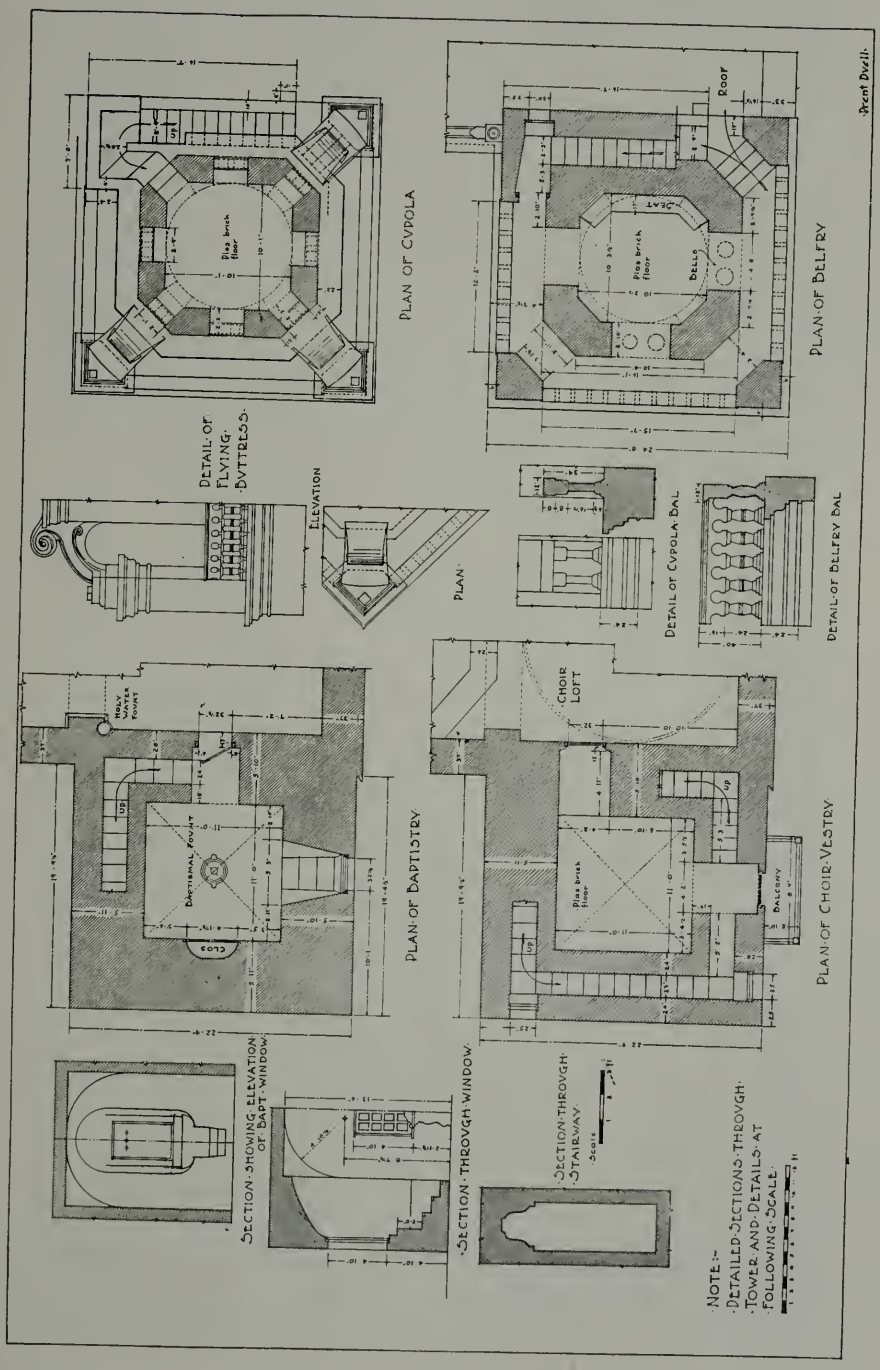
FRONT ELEVATION, SAN XAVIER DEL BAC, ARIZONA



WEST ELEVATION OF CHURCH,
SAN XAVIER DEL BAC, ARIZONA

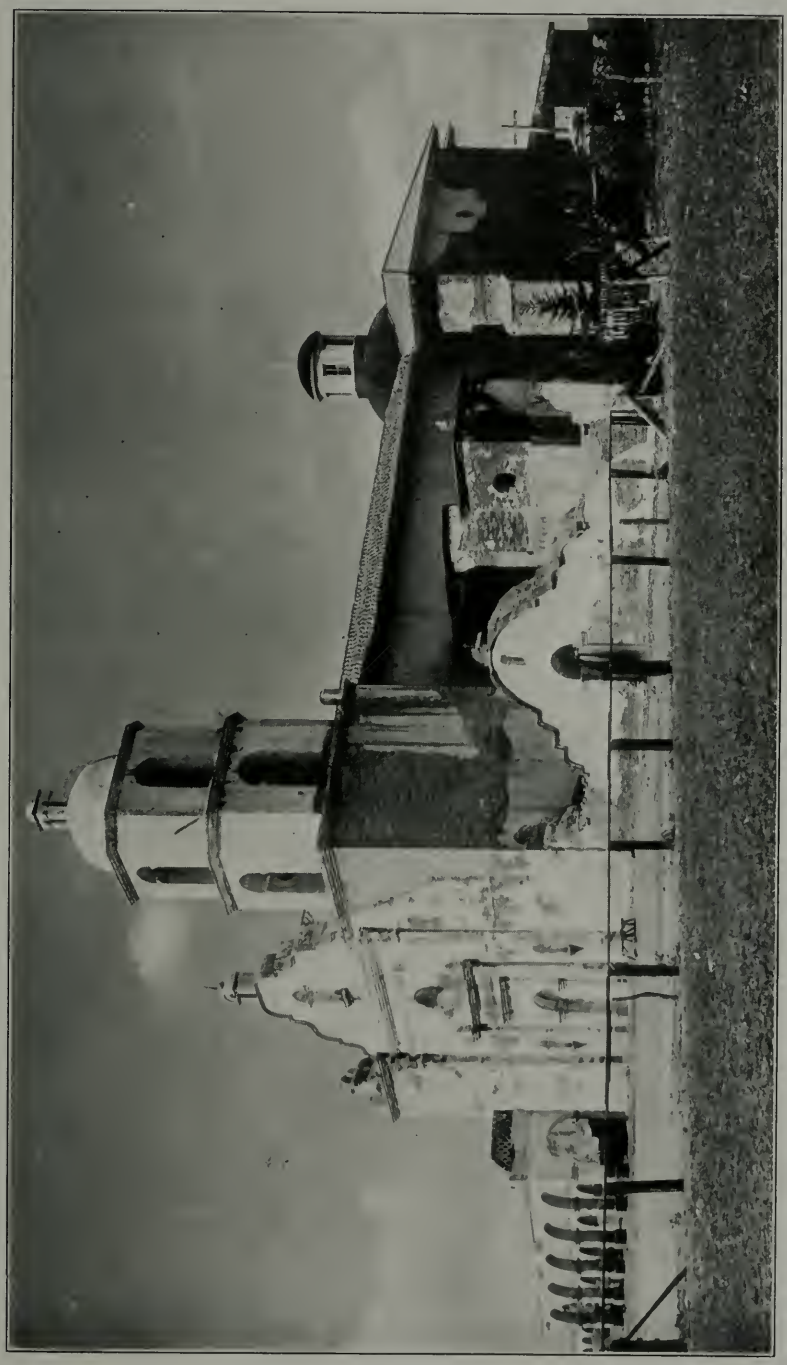


SECTIONS, SAN XAVIER DEL BAC, ARIZONA



SECTIONS THROUGH TOWERS, SAN XAVIER DEL BAC, ARIZONA

SAN JOSE DE AGUAYO, TEXAS



SAN LUIS REY MISSION, CALIFORNIA

Landscape Architect in City Park Developments*

AS ONE travels through the smaller cities of California it must be said that the average City Park is a disappointment, and inasmuch as the profession of Landscape Architecture may be held responsible for such developments, which in their nature are essentially landscape architectural problems, we propose to point out a few facts of cause and effect which may be of constructive value.

Park sites are often acquired by cities (1) through gifts of land not well adaptable to development for the special functions of a park in that particular neighborhood, (2) through political influence in the determination of the site, (3), and this is the most important, through the selection of a site without adequate scientific investigation of its fitness for the particular purpose for which the people are asked to devote their money.

There is a growing demand for the services of the expert in the development of parks; but unfortunately he is seldom consulted before the purchase of the site, and the site selected may have very serious limitations for a development that would be appropriate for its greatest usefulness. This is true whether the project be a convenient passing-through park in the center of the business district; or a recreational and playground park, removed from the business district; or an automobile park to accommodate the visitors in transit; or of a scenic park of large extent at a considerable distance.

So many factors must be considered in the wise selection of park sites, whose functions in the city plan are largely dependent on proper location, that it is impossible to more than generalize in an article of this kind. Gen-

*Published under the auspices of Pacific Coast Chapter, American Society of Landscape Architects, by Messrs. W. D. Cook and Geo. D. Hall, Los Angeles.

erally speaking a park in the business district should be on a site which would lend itself to a more or less formal treatment, and be on ground that is comparatively level. A recreation park can be made much more interesting on land of slightly rolling topography, with an area sufficient to give a desirable sense of privacy through border plantations. An automobile park is primarily for the accommodation of visitors, but it should be sufficiently large for the purpose, logically located, scientifically planned and if possible attractively developed by plantations. The large scenic park suggests a rugged picturesqueness of site, and should therefore offer opportunity for development on naturalistic informal lines of design.

Let us consider what cities actually need in the way of open spaces and parks for the health, pleasure, and use, of the people. The business centers of cities require open spaces happily designed, and with sufficient seating capacity to care for those who may desire to sit in the open and read their papers at noon or other times. These parks are really the poor man's club and fulfill a real service to humanity. Cities, either through adequate school grounds or public open spaces, should provide playgrounds for small children within one-third of a mile of every child's home. Not only is this for the health and welfare of our future citizens, but in keeping the children off our streets, these playgrounds function for the whole city's welfare. Recreation parks for youths and adults, within two miles of the residential section, accessible by electric car, bicycle or automobile, should also be provided for similarly good reasons; and the far sighted city will acquire the sites in anticipation of its residential growth, not only because it can in this way acquire the best sites for the purpose, but also because building of homes will be stimulated in that neighborhood with rising land valuations. It should also be said that the cost of acquiring land in outlying districts is very much less than it will become when thickly populated, which too often means that the opportunity for a park is lost.

California is unusually fortunate in having a high percentage of automobiles to its population, and excellent roads, so that for certain types of recreation park or scenic park, sites at a distance of ten miles or more are entirely appropriate, and if properly developed will be assured of a large patronage.

Ultimately it is hoped that Los Angeles for example, like a number of eastern cities, will develop a Metropolitan Park System by which all the smaller cities about her may share in the benefits of a chain of parks and parkways that will provide many miles of scenic drives without having to go into the congested parts of any city. Almost all of our California cities are woefully deficient in adequate public park areas, a serious fault which many eastern cities have overcome only at tremendous cost, but there are indications that Los Angeles and her surrounding cities are sensing this deficiency.

It is the duty of Civic Improvement organizations, public spirited citizens, and all others who know the need of providing parks, to arouse an interest in parks and to spread a knowledge of where, how, and why our cities should provide themselves with adequate parks for present needs and future growth.

* * *

To Kill Moss on Brick Walls

Paint the affected surface with water containing from one to two per cent of carbolic acid. After half an hour it can easily be scrubbed off with cold water and a stiff scrubbing brush.—American Paint and Oil Journal.

Some Notes on Quantity Surveying

By ARTHUR PRIDDLE

THE subject of Quantity Surveying is commanding more and more attention in California, and it seems probable that some definite action will be taken by those most interested in the very near future. At the annual convention of the American Institute of Architects held recently in Washington, D. C., the subject came up for earnest discussion. The writer would like to offer a few suggestions for the benefit of architects and others interested.

First—There should be some standardized way of procuring the quantities for a piece of work so that the work will not need to be duplicated or multiplicated, as is the case under the present lack of any kind of system or governing rules, legalized or otherwise.

Second—There should be more confidence between owners, architects and contractors, which would take the matter well along towards a proper solution.

Third—The owner and architect should more generally than is the case, have the plans, specifications and details worked out so that there would be no question as to the requirements before the contractors are asked to submit bids.

Fourth—To accomplish this, careful studies and preliminary estimates should be made by competent men, for the owner's information, at his expense of course, for no one else is interested up to that time.

Observe the saving in time and expense possible if the projects were handled in this manner—the quantity surveyor and estimator could be called in to make preliminary estimates on a pencil layout and suggestive specifications—before the architect has even drawn plans, saving his time, and when the owner has found out what he requires and what he can pay for, the contractor can be called in and he will then know that he has a running chance to get a contract for the preliminary work he is doing and has to do in each case.

Fifth—Contractors are too willing to give "rough" estimates for nothing—many times these estimates are worse than guesses and fall far short of accomplishing the object sought by either party. The writer knows of many instances where the "guess" was made low enough to induce the owner to start work, the finish to take care of itself.

Sixth—With definite specifications, completely marked and sized (not glued—FIGURED) plans, there is only one quantity in the job.

The writer has been asked many times if he would guarantee his quantities. The answer has been NO, as the plans and descriptions are not perfect and the price paid for the service is too small and the quantity surveyor is not generally a partner in the business—only partners can guarantee the work.

In the old countries, where the quantity system is in vogue and has been from time immemorial, the plan works well and the owner pays the bill for the quantity survey and, please note, that he pays a good fee for the service—2½ per cent usually—and the quantities are guaranteed. A quantity surveyor, getting such a fee, can guarantee anything; he can afford to put the time on the work and have everything straight and understandable before he puts it out for figures.

It is noted that in the discussion and reports that the contractors and architects have decided that the owner knows that he pays the bill for waste quantity surveying and estimating, in that the contractor is

compelled to and does add for this service on work he gets. The writer has never seen the contractor yet, as far as he can recall, who made such a charge. In fact, in most cases, the contractor shuts his eyes to many items in making estimates that cost actual net cash in gold dollars, to get the job.

It is also a fallacy to imagine that the owner is willing or has the remotest intention of paying such a charge—such charges are in no way connected with his building, as far as he can see. The cost of a quantity survey as proposed would only be an extra cost to his building, in his estimation, and he will be the last person to agree to it willingly.

Why not have sensible rules formulated by the proper societies and legalized and published by competent authorities and have this feature of the construction business put on a proper and sensible basis?

* * *

New Building Material

A NEW patent recently taken out in Austria by Dr. Rudolph Ditmar, of Graz, for an inexpensive building material is described in The Scientific American (New York). It is designed, we are told, to relieve the shortage of dwellings, which is felt there as well as here. The process is not strictly new, being based upon a system long employed by the Chinese and Japanese. We read:

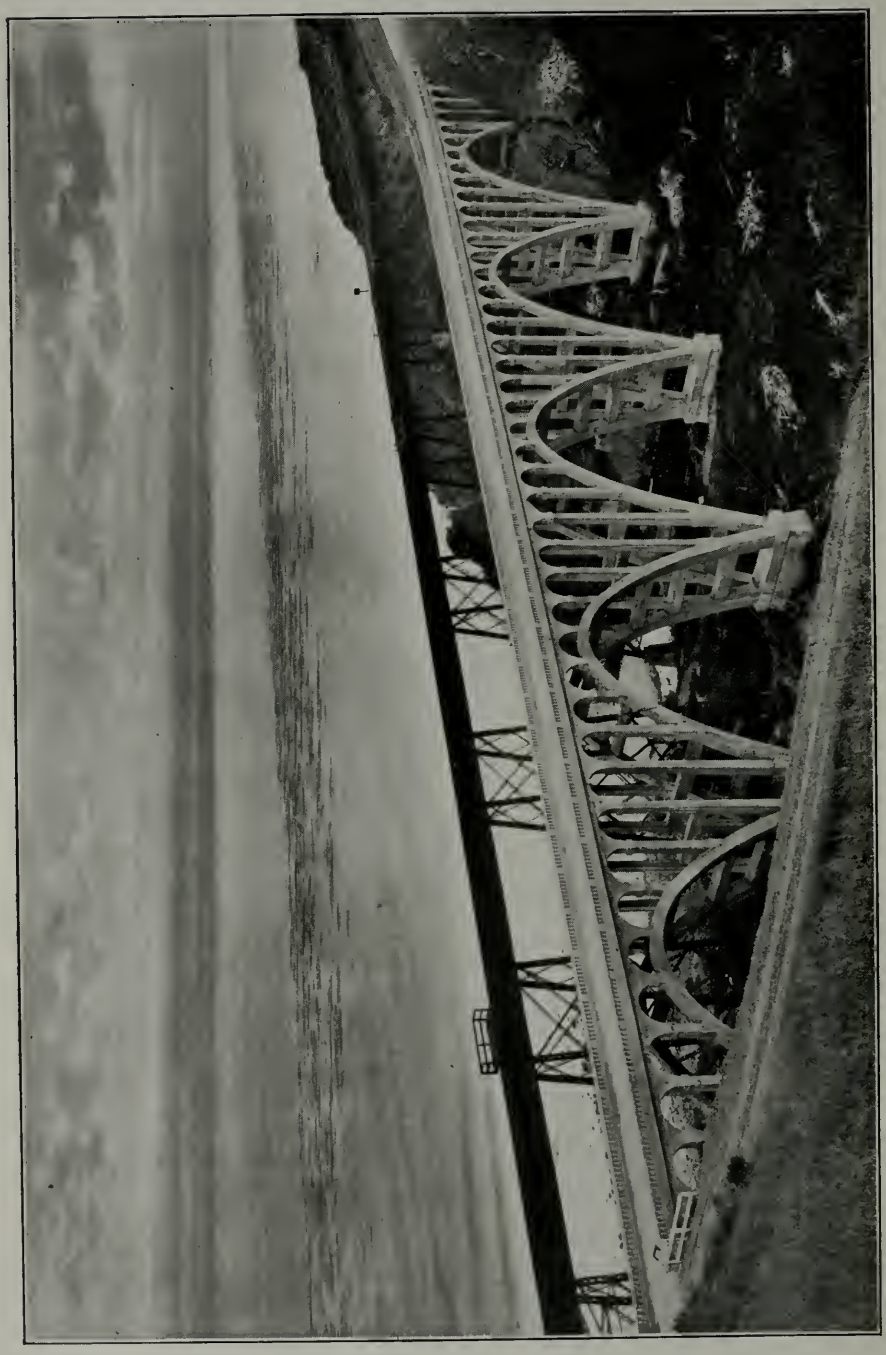
"The inventor begins by placing two sheets of wire netting parallel to each other at a suitable distance and binding them together with wire. The receptacle thus formed is then filled with gravel sufficiently coarse not to pass through the mesh of the wire. The outer side of the netting is then covered with thick concrete which penetrates the meshes of the wire and unites with the gravel immediately in contact therewith, to form a layer in which the wire netting becomes embedded. After these outer slabs of concrete have hardened the gravel in the middle can be poured out and the space which it occupied filled by asphalt, tar, paraffin, or any other desired filler. Such a substitution is especially useful for the construction of the walls of ships or buoys or other articles where lightness as well as strength is demanded. The inventor claims several advantages for this kind of building material, including cheapness, the saving of more valuable material, and the readiness with which the hollow concrete slabs can be shipped to places difficult of access, such as mountain resorts. Furthermore, houses thus built can readily be 'wrecked' without the use of explosives. They also provide an easy means of insulating the system of pipes which supply the building and furnish excellent protection against extremes of cold and heat. He claims, too, that there is no sweating of the concrete."

* * *

Architects Start Home Building Bureau

ARCHITECTS in Kansas City, Mo., have taken up the problem of making available for the small home builder competent architectural service at a price within the reach of the builder. The Architects' Small House Service Bureau of Kansas City is being organized along the lines originated by the architects of Minnesota and later endorsed by the American Institute of Architects.

The bureau will be self-supporting, deriving its income from a nominal fee, to vary from $18 to $32 a house. The patron of the bureau will receive complete plans and specifications of the design chosen, a quantity survey on which to figure costs, advice as to contractors and supervision. Architects probably will contribute about $100 each to finance the bureau, receiving on this an 8 per cent annual return. Any earning above that will be spent in research in the interests of better and more economical design and construction.



BRIDGE ON STATE HIGHWAY, SANTA BARBARA COUNTY, OVER ARROYO HONDA

Concrete Bridges of Unusual Design in California and Oregon

IN ITS recent report on a study of the state highways the U. S. Bureau of Public Roads declared the standard of design and workmanship of California highway bridges to be high and the costs very reasonable. Most of the large bridges on the state highways are built or paid for by the counties in which they are located. The plans are either made or checked by the engineers of the highway commission. Originally plans for bridges were prepared or checked by the general engineering force of the state highway commission. Since July 1, 1919, however, this work has been done by a separate department.

Altogether more than 30 bridges have been built by the California state highway commission, either under contract or by day's labor, exclusive of bridges erected by counties. These range from structures costing only a few thousand dollars to more than $450,000. The largest is the Yolo By-Pass trestle bridge in Yolo county, 3.3 miles in length, constructed of reinforced concrete, with one steel bascule span. This project cost a little more than $450,000. The next largest is the steel bridge over the Salinas river in Monterey county, which cost $260,000. The steel bridges over Santa Ynez river in Santa Barbara county and Eel river in Humboldt county, cost $181,230 and $121,621 respectively and the bascule bridge over Petaluma creek, Marin and Sonoma counties, cost $108,543. With the exception of the steel bridges noted and one timber bridge all the important structures built by the state highway commission are of reinforced concrete. The latter embrace a wide range in design as will be noted by the accompanying illustrations.

In his report, appended to the second biennial report of the California highway commission, recently issued, Mr. H. E. Warrington, assistant highway engineer in charge of the bridge department, urges that in connection with the building of bridges by counties "legal authority should be granted to the commission to enforce proper standards and compel inspection by qualified inspectors, and if necessary, to condemn unsafe structures and require their renewal." Continuing, he says:

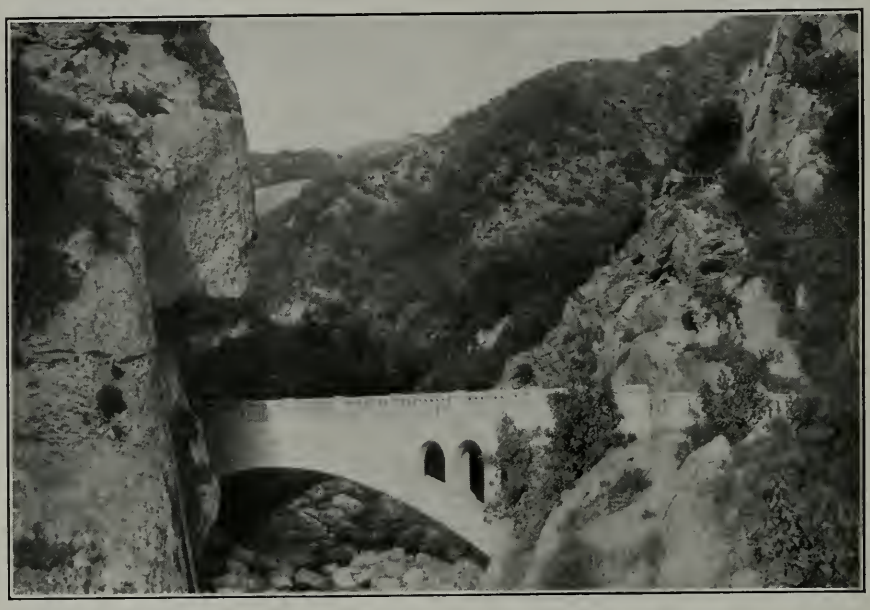
> The temptation to build the cheapest bridge, regardless of its adequacy, is too great to be resisted in many instances, and while it is true in most cases that the county authorities desire to construct substantial structures only, their lack of knowledge as to what is proper has resulted in the erection of inferior bridges which are unable to stand the heavier traffic for any length of time. Several such now exist on the state highways, and renewals, or extensive repairs amounting substantially to renewal, will soon be necessary.
>
> The need of standard general specifications covering the design, manufacture and erection of structures, to which all bridges built upon the state highway must conform, is quite obvious. Such specifications covering modern requirements have been prepared and used in our designs, but the lack of authority to insist upon their use by others should be remedied. There will always be differences of opinion on such a large subject as bridge design, but the main features and general details have been well settled by past experience, and conservative practice should be followed to secure the best results. Bridges upon the state highways, being built by or under governmental authority, are regarded as models to be followed by others, and whether they be good or bad, their influence upon other construction is great, and is worthy of grave consideration.
>
> It is probable that most of the unsatisfactory work done has been due to lack of specific requirements and ignorance of just what is demanded in state work. Accordingly, the specifications above mentioned have been made purposely, very full as regards details, and structures built under them will conform with present demands to a much greater extent than heretofore.
>
> More particularly as regards concrete structures, their design, except in the case of arches, is apparently so simple that many persons not qualified by experience or knowledge in that particular field have attempted it, forgetting that many considerations exist due to its more or less monolithic action requiring most careful analysis.

As has been well said, "poor materials are shown up in a comparatively short time, but inadequacy of design is more likely to be responsible for defects which do not develop until years after construction."

Bridges of first class design and workmanship have a higher first cost, but this added expense is more than repaid in their lessened maintenance and longer life. The railroads have long since learned this lesson, and it is only a question of time until it will be forced upon the highway officials of the country by costly experience, if in no other way.

Describing important bridges designed by the commission and completed during the last two years the report says:

The Eureka slough bridge, in Humboldt county, is interesting because of the use of a wooden lift span, made necessary on account of the lumber traffic on the slough. The total length of the bridge is 712 feet, made up of an east approach of sixteen 30-foot reinforced concrete girder spans on reinforced concrete piles; the lift span above mentioned, 75 feet long, on concrete piers, with wood towers and creosoted pile fenders and dolphins; and a west approach of the same type as the eastern one, but of only four spans of 30 feet. The roadway is 21 feet wide, and the entire bridge is built over a salt marsh.



BRIDGE ON STATE HIGHWAY, SANTA BARBARA COUNTY, OVER GAVIOTA CREEK

The Cottonwood creek bridge, in Shasta county, consists of nine 60-foot reinforced concrete earth filled arches founded upon piles, the total length being 540 feet. The roadway width is the standard 21 feet.

The bridge over the Salinas river, near King City, in Monterey county, is one of the latest structures to be completed by the state. Over the main channel are built fourteen 100-ft. steel truss spans on concrete piers founded upon wood piles. The south approach is a long concrete trestle of thirty-nine 30-ft. reinforced concrete girder spans with reinforced concrete pile bents, and the north approach, of the same type, is sixty feet long of two 30-ft. spans, also upon concrete piles. The total length of the bridge is slightly over one-half mile (2653 ft.). Bank protection was necessary on the north side, and a pile and plank structure some 2200 ft. long was placed above the bridge and for a short distance below, where it connects with existing protection.

The Arroyo Honda bridge in Santa Barbara county is a reinforced concrete arch structure, and has five arches, one of 78-ft. span, three of 96-ft. span and one of 85-ft. span. All the arches have high rise, the two shorter arches being un-

symmetrical, as good foundation material was encountered high upon the banks. In addition to the arch spans there are short concrete approaches at each end, on reinforced concrete columns. The total length of the structure is 528 feet

Two bridges in a rough mountainous country, completed during the past year in connection with the road development plans of the Oregon state highway commission, have attracted much attention from engineers, not because of their size or length, but because of some rather unusual conditions which surrounded their construction. Both bridges, writes Mr. Jesse A. Currey, C. E., in Modern Building, are part of the highways which lead through the mountains of Oregon, one of them being located in the extreme northern part of the state right in the heart of the Cascade mountains and the other in the extreme southwestern part of the state among high spurs of the same range. Both bridges span mountain streams, which are uncertain in character due to the rapid change not only in the depth of the water, but also the velocity of the current.

BRIDGES ON STATE HIGHWAY, SANTA BARBARA COUNTY. OVER CANADA DEL REFUGIO

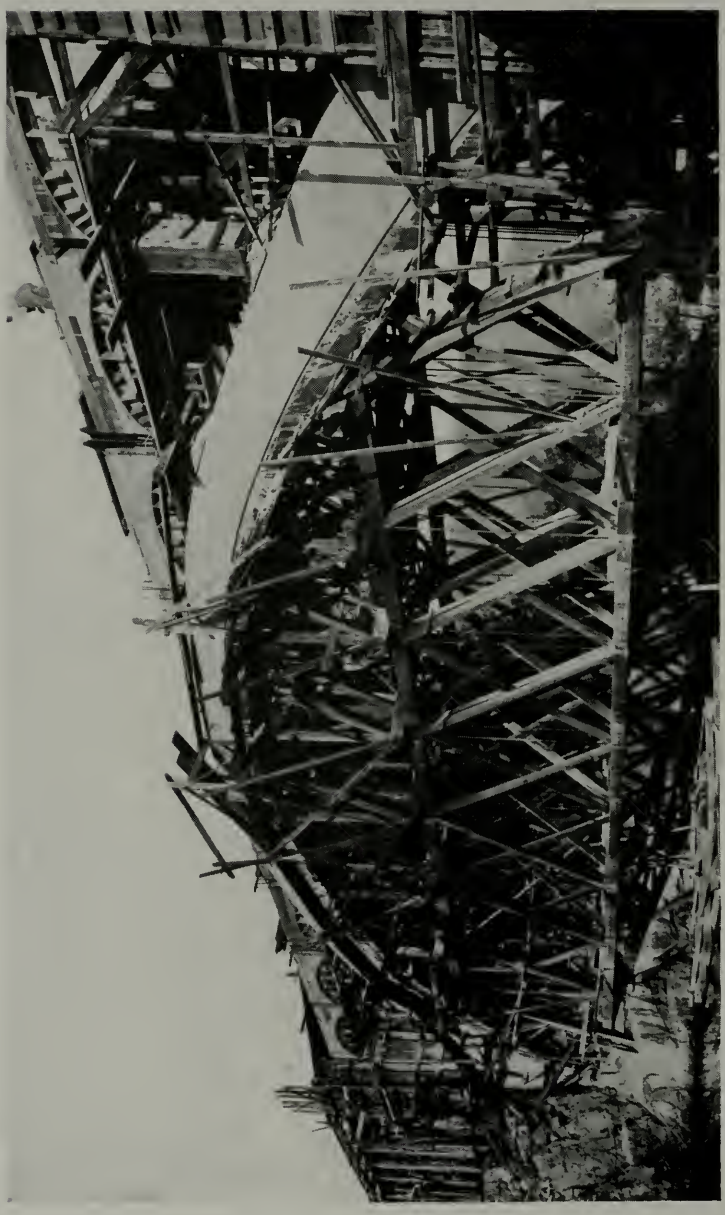
Both bridges were planned by the engineers of the Oregon highway commission, of which Mr. Herbert Nunn is chief engineer, and Mr. C. B. McCullough bridge engineer, and both were constructed under a lump sum contract by Messrs. Parker and Banfield, contractors, of Portland, Oregon.

The bridge over Hood river is about 65 miles east of Portland, and consists of three ninety-foot arch spans with a 140-foot beam-and-girder concrete approach. The bridge overall is 22 feet wide, thus providing for a twenty-foot roadway. The railing is a straight spindle moulded with a broad cap. In constructing this bridge the contractors had a favorable location, for directly next to the new bridge was an old wooden structure. In pouring the piers and foundations for the new structure they put a half yard hopper on an old automobile, and by running it back and forth from the mixing plant at one end of the bridge they made rapid

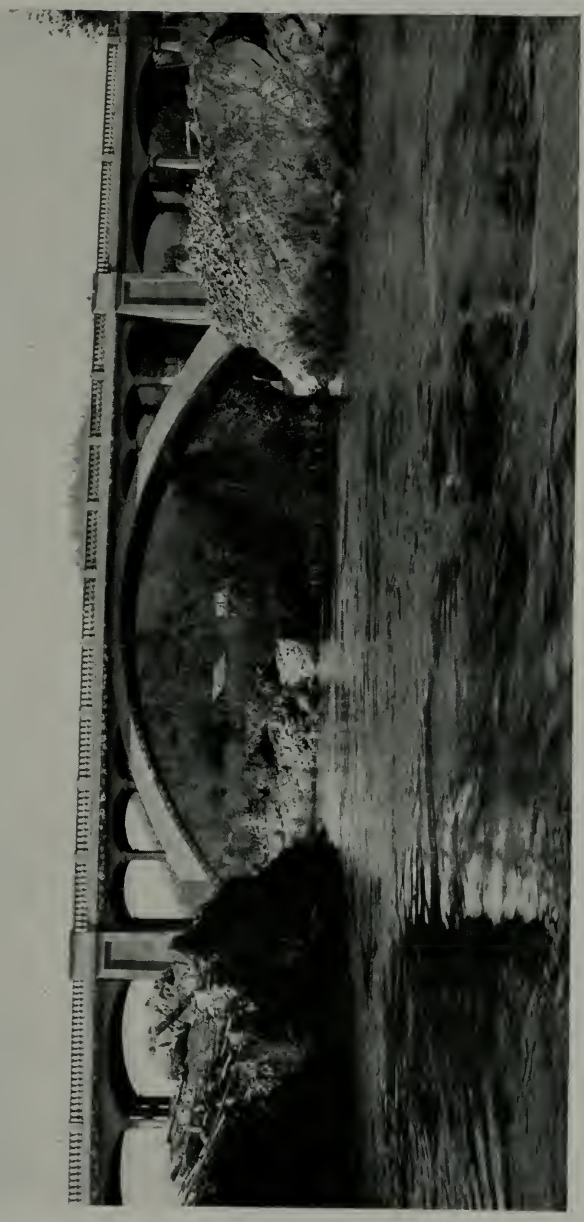
BRIDGE ON CALIFORNIA STATE HIGHWAY, IMPERIAL COUNTY, OVER MYERS CREEK

BRIDGE ON STATE HIGHWAY, SHASTA COUNTY, OVER COTTONWOOD CREEK

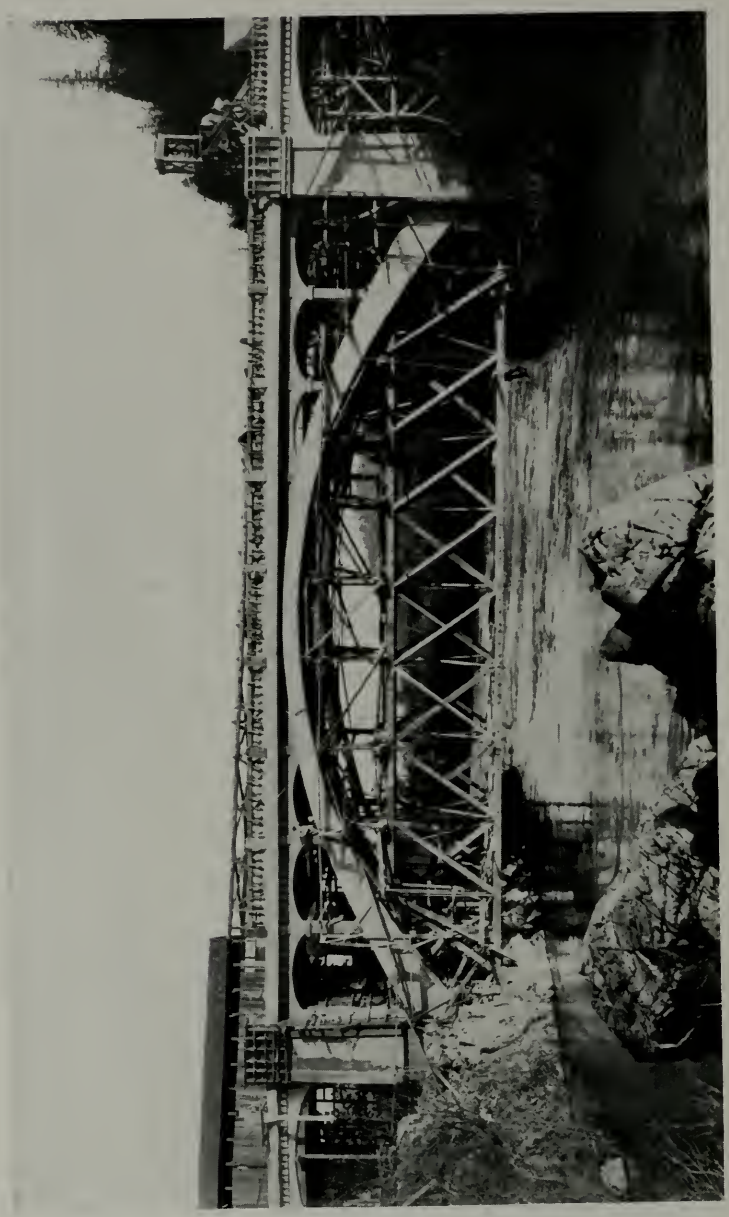
ROGUE RIVER BRIDGE. NOTE FINE DETAIL OF ORNAMENTS AND MOULDED HAND RAIL HERBERT NUNN, HIGHWAY ENGINEER; C. B. McCULLOUGH, BRIDGE ENGINEER



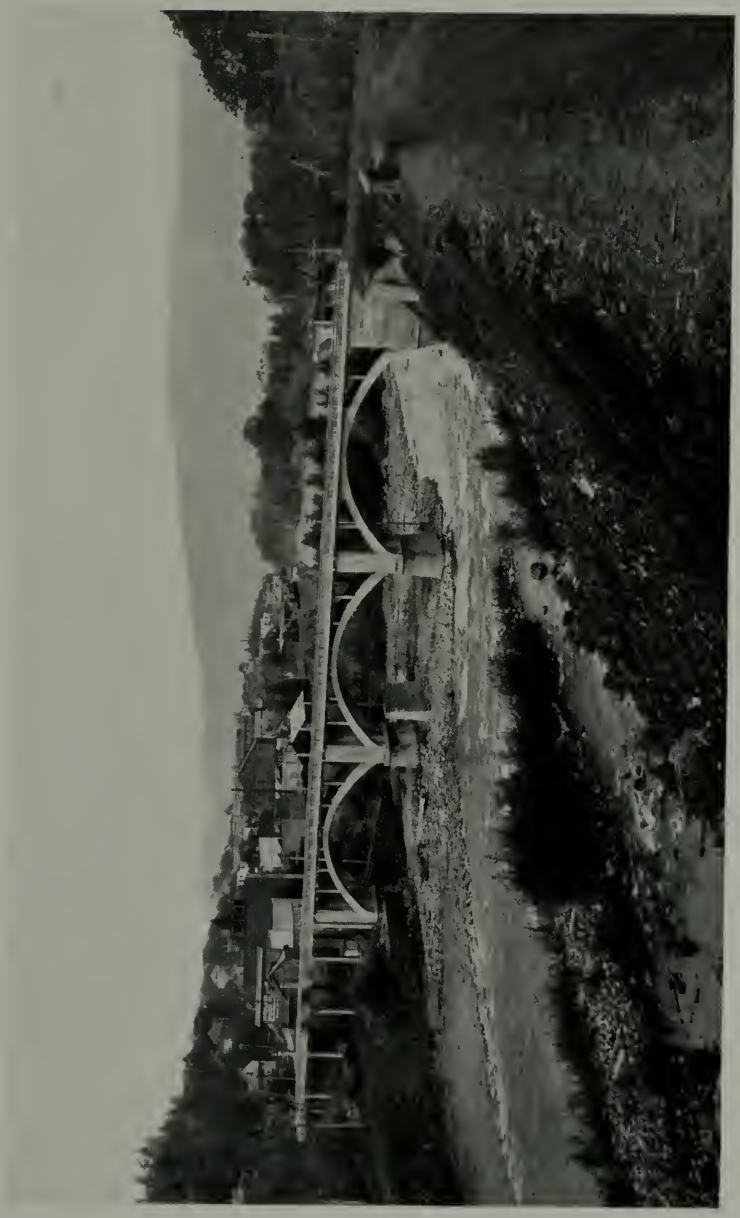
ROGUE RIVER BRIDGE, OREGON, SHOWING HOWE TRUSS SUPPORTING FRAMEWORK OF ARCH SPAN. HERBERT NUNN, HIGHWAY ENGINEER; C. B. McCULLOUGH, BRIDGE ENGINEER



ROGUE RIVER BRIDGE, SHOWING MAIN ARCH AND REMARKABLE SETTING. HERBERT NUNN, HIGHWAY ENGINEER; C. B. McCULLOUGH, BRIDGE ENGINEER; PARKER & BANFIELD, CONTRACTORS



ROGUE RIVER BRIDGE, OREGON STATE HIGHWAY, SHOWING METHOD OF CONSTRUCTION. HERBERT NUNN, HIGHWAY ENGINEER; C. B. McCULLOUGH, BRIDGE ENGINEER



HOOD RIVER BRIDGE, OREGON. HERBERT NUNN, HIGHWAY ENGINEER; C. B. McCULLOUGH, BRIDGE ENGINEER

progress in pouring the piers and footings by shooting the concrete from the automobile on the old bridge into the forms. When it came to pouring the arch rings and roadway they erected two towers and spouted the concrete from these into the forms.

The form work for the arch rings was built up from the river bed, some sections being trussed over so as not to interfere with the normal flow of the stream. On account of rapid changes in the stream all this work had to have extra bracing, for once or twice during construction, due to sudden storms in the mountains, the stream rose as much as sixteen feet and covered the piers.

This bridge contained 1012 cubic yards of Class A concrete, 241 cubic yards of Class B and 647 cubic yards of Class C. There were 93,500 pounds of reinforcing steel and 632 lineal feet of handrail. The total contract price was $40,276.06 and to this there was added $7219.80, paid by the state for work on the approaches and $1804.79 for engineering and inspection, making the total cost of the structure $49,300.66 or $7.75 per square foot of road surface.

One of the most interesting pieces of work was that of the bridge over the Rogue river near Gold Hill, about 300 miles south of Portland, known now on the highway maps as "Rock Point Arch." It consists of one 115-foot arch span with six 25-foot approach spans on one end and seven on the other, making the total over-all length of the structure 540 feet. The topography of the country at this point is such that it provided a wonderful setting for a beautiful structure, and Bridge Engineer McCullough in his design kept this in mind, as is evident from the pictures of the completed structure.

* * *

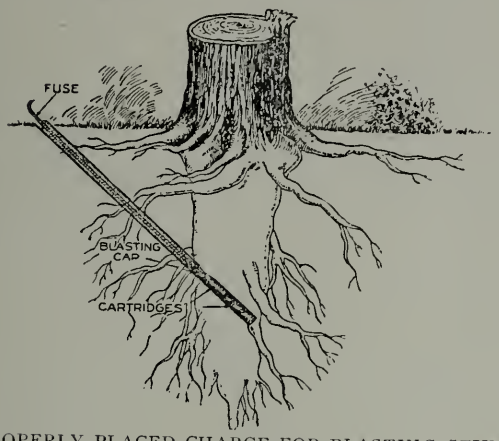
Proposed Bridge for San Francisco Bay

Preliminary plans for a combination bridge and tube to span San Francisco Bay have been completed by Messrs. John V. Davies and Ralph Modjeska. The scheme, in many respects, is not unlike that submitted by Mr. C. H. Snyder, a San Francisco engineer, to the U. S. Engineers early in June and filed with the government July 1 of this year. Mr. Snyder's plan is a modification of a scheme which originated with Captain John G. Little of the U. S. Engineers and outlined to the San Francisco Chamber of Commerce at a public hearing last October. The Davies-Modjeska plan differs only in certain developed details, such as the construction of a span bridge instead of a viaduct, and provision for an automobile roadway, as well as passage ways for pedestrians and trains. It is estimated the bridge and tube can be built in less than four years at a cost of approximately $40,000,000. The tunnel will be at the San Francisco end, as shown in the plan. It will be 3,000 feet long, having two railroad tubes and one vehicular tube twenty feet wide. The tube is made necessary to provide a clear channel 2,500 feet wide for navigation.

The tunnel will rise from the muddy bed of the bay to meet and connect with a massive bridge, 11,500 feet in length, supported by about forty spans and carrying on one side the two railroad tracks and on the other the roadway for vehicles, which will be forty feet wide instead of twenty feet in the tunnel. The bridge will carry the crossing most of the way across the bay, being succeeded at the Alameda-San Francisco county line by 3,600 feet of pile trestle and then by 12,000 feet of solid fill, mole style, across the shallow waters and across Alameda itself to the eastern terminal of the estuary.

Use of Explosives in Clearing and Preparing Right of Way for a Highway

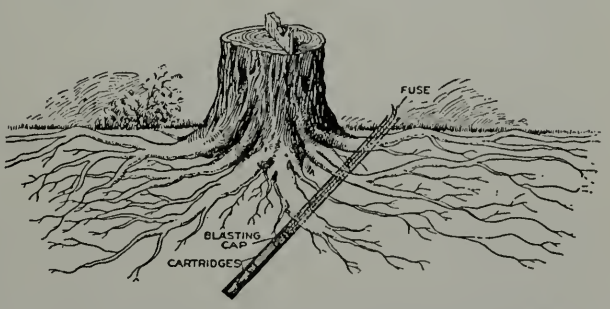
ROAD building, as a rule, involves a large number and variety of operations, all of which must be properly synchronized in order to secure the most economic rate of progress. Furthermore, in road work, the problem of how to reduce the amount of manual labor never ceases to make itself felt. Here the road builder will find many uses for explosives. For example, the output of a steam shovel can frequently be greatly increased by a judicious use of explosives to loosen the ground. A few stumps or boulders which would require hours of arduous manual labor to remove with the attendant delay or inconvenience to other parts of the organization, can be blown up in a few minutes, or the excavation of a wet ditch, a job which labor justly despises, can often be accomplished by means of explosives with satisfaction and profit to all concerned. In the clearing and preparation of the right-of-way, the contractor will frequently find occasion for the use of explosives. Some useful suggestions on this last mentioned phase of road building are given by Mr. Arthur P. Anderson, highway engineer, U. S. Bureau of Public Roads, in a book, "Modern Road Building and Maintenance," published recently by the Hercules Powder Co., Wilmington, Del. The notes following are abstracted from the book by Engineering and Contracting:



PROPERLY PLACED CHARGE FOR BLASTING STUMP HAVING TAP ROOTS

BLASTING STUMPS AND TREES—Many thorough tests covering a long period of time have proven that the cheapest, quickest, and most satisfactory means of removing stumps and large trees from the right-of-way is by the use of dynamite, alone or in conjunction with a stump puller. When the stumps are small and the ground loose they can often be removed by the aid of a team of horses, a tractor, truck, or road roller. In swamps and wet ground where stump removal by other methods is almost impossible, satisfactory results are easily obtained by the use of dynamite.

The most economical method of removing stumps with lateral roots is to combine the use of dynamite with a stump puller. The large stumps are blown loose and split by means of charges of explosives properly placed, and then the roots and pieces that remain are removed by the stump puller, team with block and tackle, or a tractor.



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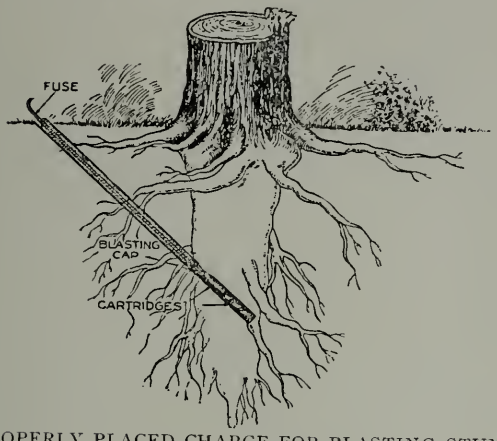

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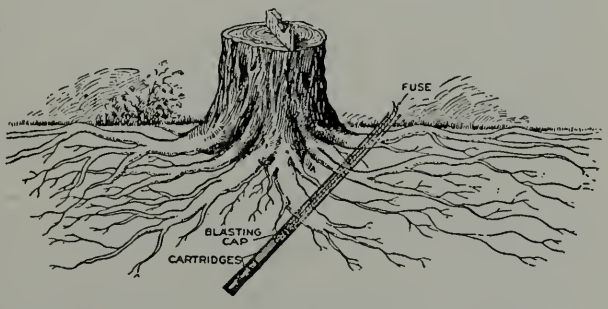

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A large job that contains all sizes, types, and ages of stumps can usually be handled most economically by making two trips over the ground. A few stumps that appear easy enough for the puller will always fail to move and will require blasting, while the blown stumps will occasionally leave a root too tough for the team. Therefore, a second shooting of left-overs and a cleaning up of loose pieces and roots is occasionally advisable. The work should be handled in such manner that the blaster and teams do not interfere with each other. This can be done by having them working on different ends of the job.

Different Types of Stumps—Stumps are divided into two general classes: Those having a heavy, long tap root, with a fringe of lateral or brace roots near the top, like the pine and white oak, and those having large spreading, lateral roots, like the black oak, chestnut, and redwood. To remove these different types properly by dynamite requires slightly different methods. Furthermore, the older a stump is, the more easily it can be blasted, as its resistance to removal decreases with the extent of decay. Green stumps are the most difficult to take out and require from half again to twice the quantity of explosives.

Stumps With Heavy Tap Roots—There are two methods of placing the charge in blasting tap-rooted stumps.

When the brace roots are small, and it is desired to use a minimum of powder at the expense of a little more labor, the best way is to expose the tap root to a depth of 18 in. or 2 ft., or make a hole with a soil auger, or punch bar that will strike the root about 2 ft. below the surface. A hole is then bored with a wood auger somewhat more than half through the root. In loading, the cartridges should be split, and all of the charge packed into the hole in the wood if possible and the remainder of the hole then filled to the surface with moist clay or other available stemming material and well tamped. Where much work is involved, a boring machine with a power-driven auger can be used advantageously.

Where the boring of the root or the stump involves too much time or expense the stump may be removed by simply placing at least 2 ft. below the surface of the ground, but snug up against and symmetrically around the tap root, two or more charges of dynamite which are then exploded by a blasting machine. Sometimes a single large charge is placed in this manner. This method requires more powder, but less labor, than that described in the preceding paragraph.

If it is desired to place a heavy charge in a hole or to concentrate the load in the bottom of a hole, an enlargement of the bottom for this purpose may be effected by "springing." To spring a hole a light charge of one-quarter or one-half a cartridge is exploded in the bottom.

When shooting a single hole, fuse and blasting cap are entirely satisfactory, but when there are more than one, a blasting machine should be used, so that all the holes will explode simultaneously, each, in this way, assisting the other.

The depth at which to place charges depends upon the size of the tree or stump and the tap root, the methods used for blasting, and also upon the depth of the excavation to the road grade at that point.

The amount of charge to use will vary considerably, due to difference in toughness of roots, the character of soil, wet or dry ground, and other conditions. For this reason no fixed rule can be given for the quantities of explosives to use for various sized stumps. The proper loading will best be determined by practical tests on the ground. The blasting of half a dozen stumps will give a very good line on the most economical amounts to use under existing conditions.

Blasting Stumps Having Large Lateral Roots—When blasting stumps having heavy spreading lateral roots, a charge placed under the center of the stump alone might result in merely splitting the stump, the large roots remaining and holding the split pieces. This method is successful with small, lateral-rooted stumps, but in the case of large stumps charges must be placed also under each of the heavier roots, the amounts depending upon the size of the roots, which can be determined with a ¼-in. pointed steel rod or searches. A blasting machine should be used for simultaneous firing.

When using a single charge under a small stump of this kind or under an old stump with decayed center, the load should be placed a considerable depth below the butt, so that a substantial cushion of earth will distribute the force of the explosive and prevent mere splitting of the stump.

While a stump removed with a puller often has several times its own weight of earth clinging to it, a blasted stump is free of such encumbrances and is often broken into several pieces. This greatly facilitates subsequent handling and burning.

Removing Stumps of Very Large Size—In the Pacific Coast states, redwood, fir, pine, and cedar trees grow to enormous size. Their roots usually stay near the surface, due, in a large measure, to the wet climate. These stumps can be removed in the same manner as the smaller stumps of similar type.

As an indication of the amount of explosives required to remove these enormous stumps, square the largest diameter in feet. The result will give the approximate number of 1¼x8-in. sticks necessary. This is no fixed rule, but merely indicated a point from which to start. The varying character and condition of stumps and soils, here as elsewhere, cause very different requirements, and only experience can establish the most efficient practice.

Removing Trees With Dynamite—Clearing the right-of-way for road work frequently necessitates the removal of many trees. The quickest method of accomplishing this is by blasting. In felling trees with dynamite, the placement of holes is the same for stumping. Large quantities of explosives are necessary, however, because of the greater weight to be lifted. By judgment in the placing of charges the direction of fall can be controlled. An observance of the wind may be made to render material assistance in both felling and direction of fall. Trees having value for saw stock should not be blasted, as the trunk may be ruined for the saw mill by a split resulting from the explosion.

Selecting the Type of Dynamite for Stumping—It is frequently the case that in blasting stumps, the road builder uses almost any kind of powder that happens to be on hand. While this may do the work, it is generally not economical, and the dynamite best adapted for stump removal should be selected.

In dense, heavy soils, such as those containing muck, clay, or silt, a low strength explosive is the more satisfactory. A heaving and lifting effect is desired, and the confinement of the charge in such compact soils is so good that the lower strength powders accomplish the work before the escape of the gases. Twenty to 30 per cent strength are best for this work.

In coarse, light, dry soils, such as sand, an explosive is necessary that exerts its force before the gases can get out through the quickly displaced material. For this reason, higher strength powders, 50 to 60 per cent, are required for good results.

* * *

The money the other fellow has is Capital. Getting it away from him is Labor.—(S. C.) Record.

* * *

If you've got to use a hammer, build a house.—New England Printer.

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THE FOUNDATION OF BUSINESS

Character remains the foundation of business, even though much of that foundation may have crumbled to dust since the signing of the armistice.

"In the end," says one commentator, "business comes down to character and moral obligations. In ordinary times, when things are prospering, with little pressure upon character, men stick to their bargains and carry out their contracts. But when clouds come up like thunder and the fulfilling of obligations means loss, pretty much the whole pressure of business falls upon character."

So character not only is the foundation of business, but its test as well. The true test, says Valve World, comes in times like the present, and when the abnormal has given place to normal and our business once more sails on even keel, the character which has stood the test of recent months will be the foundation upon which business of the future will go forward.

Notes and Comments

Trans-Bay Bridge Should be Artistic

Earliest possible relief of transbay and peninsula traffic problems is imperative. The projected skyline boulevard down the peninsula is one element of relief in prospect, the proposal to electrify the Southern Pacific lines to San Jose is another, and added ferry facilities another. These latter two, however, must be furnished by the railway and doubtless the railway, alert for business, will provide them when conditions warrant.

In any event the bay must be bridged as soon as possible. In considering plans for bridges, the best of engineering talent will no doubt be employed; but the project carries with it an obligation involving appearance, the artistic fulfillment of which must assure our people that no proposed bridge will result in the disfigurement of our incomparable bay landscape.

Artistic treatment is therefore as desirable as high engineering skill. This phase of the problem need not add to the cost of construction. A given amount of concrete, steel, labor and other elements of cost may, for the same capital expenditure, assume agreeable or disagreeable form; it may result in artistic effect or in mere utilitarian effect totally lacking in artistic charm.

Bridge building in ancient times developed into an art in which the highest artistic ideals found expression. These bridges, however, were of masonry construction. The introduction of structural steel in the design of modern bridges presented a new problem which as yet has not, except in rare instances, found high artistic solution. The introduction of steel in building construction has, in modern skyscrapers, evolved some

of the world's most artistic productions. It is therefore not impossible that a steel bridge may be not only practical and economical, but artistic as well.

WILLIS POLK.

Long Range Weather Forecasting

To the average citizen, weather forecasting is one of the occult sciences which is classified with crystal gazing, necromancy and fortune telling — you have two guesses and according to the law of averages you will probably be right fifty per cent of the time. To the engineer, however, weather forecasting has recently taken on new interest, for he is attempting to find out some way to determine scientifically what kind of a winter we are going to have next year, and the year after next. If this information could be determined with some degree of accuracy it would be of inestimable value not only to the power company engineer in the operating department, who is interested in determining how much water to leave in his storage reservoirs, but also to the construction engineer who wants to know how long he can work on a certain job before the snow runs him out. Its greatest value, however, would be to the farmer who at the present time has to depend on the patent medicine almanac to find out when to plow, harrow and plant.

At one of the meetings of the engineering committee of the N. E. L. A. some of the most noted meteorologists of the country were invited to attend a special session devoted to the discussion of long range weather forecasting, and many different ideas were put forward. With the wealth of the West dependent upon the development of its hydroelectric resources it is of the greatest importance that we have accurate knowledge of all the factors that enter into the most economical utilization of those resources, says the Journal of Electricity and Western Industry. If by successful long range weather forecasting we should be able to increase the output of our various hydroelectric plants, then it is as important that some study be given that subject as that the efficiency of prime movers and generators be increased.

Concrete Shop Buildings

The following is an extract from a letter by Mr. J. C. Beswick, State Supervisor of Industrial Education, Sacramento, which should prove of value to architects and engineers, particularly those engaged in the design of school houses:

In California a number of high schools are building concrete shop buildings. Our idea of the school shop is that it be built in units forty feet in width and approximately one hundred and fifty feet in length. The walls and floor are of concrete, steel sash, truss roof, in fact the building is to be of factory construction. The partitions are to be movable either with four-inch hollow tile or cement block. Because of the rapid changes in vocational education and especially in trade training, it is advisable to have all the partitions in the shop building movable so as to meet changing conditions in case the individual shops are to be made smaller or larger.

One of the newest and best high school automobile shops is at the Monterey Union High School, Monterey, California. The building is of factory construction, made of concrete, 40x150. This building is used especially for two classes, one in automotive mechanics and one in marine gas engine, organized under the Federal and State Vocational Education Acts, where the boy spends one-half day in the shop and the other half day in study and recitation. I drew up the preliminary plans which were in turn turned over to Mr. Wyckoff. The building was completed about one year ago. The contract price was $18,000.

Mr. Beswick has consented to write more fully of his experience in laying out plans for school shop buildings in The Architect and Engineer, and his article with a number of illustrations, will be published in the near future.

Sonoma High School Building

Mr. William H. Weeks of San Francisco, has been commissioned to prepare plans for a new high school building having twenty rooms and auditorium at Sonoma, Sonoma county, California, bonds amounting to $115,000 having been voted.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

New Buildings at Atascadero

Mr. John J. Roth, building superintendent at Atascadero Colony, Atascadero, San Luis Obispo county, reports that construction is well advanced on the new high school building, church and community social hall. Plans are complete and contracts shortly will be awarded for a 25-room addition to the Inn at Atascadero beach, where 20 or more cottages will also be built, as this resort is fast growing in popularity. Within the next twelve months the colony organization will start construction of a new $250,000 hotel, and a fire-proof theater to cost $125,000. Plans for both structures are being prepared.

June Meeting of Washington Chapter

The June meeting of Washington State Chapter, American Institute of Architects, was held at the Red Shield Inn, Camp Lewis, on the American Lake, with twenty Seattle members and seventeen Tacoma men present. The former made the trip in machines, and en route visited two interesting houses designed by Mr. Kutter of Spokane, namely, the Carmen residence, and the William Jones house. A friendly spirit was manifested throughout and the outing was voted one of the most enjoyable of the June meetings the chapter has held with the Tacoma group.

Los Angeles Architects Busy

Messrs. Walker & Eisen, 326 Pacific Finance building, Los Angeles, have completed plans for a five-story reinforced concrete store building to be erected on the northeast corner of Eleventh and Los Angeles streets for the House of Props. The same firm is preparing plans for a brick store building, 182x180, at Sycamore street and Hollywood Blvd., and in the same district this firm is taking bids for completion of the upper stories of the Moll building.

San Jose Residence

Mr. Herman Krause, Bank of San Jose building, San Jose, is preparing plans for a two-story residence to be built at Palm Haven for Sophia Ritz Kline.

Concrete Apartment House

Mr. C. A. Meussdorffer, architect in the Humboldt Bank building, San Francisco, is completing working drawings for a seven-story reinforced concrete apartment house for Mrs. Wm. B. Wellman and W. F. Foster at Washington and Gough streets, San Francisco. There will be fourteen ten-room apartments with all modern conveniences. The improvements will cost $500,000.

Oakland Insurance Building

The Oakland Title Insurance & Guarantee Company is to have a new home on the southwest corner of Fifteenth and Franklin streets, Oakland. The structure will be classic in design, fifty feet high and will cover ground area 50x84. The company will spend $100,000, and selection of an architect will be made shortly. Informal sketches have been received from several Oakland and Berkeley architects.

Sacramento Residence

Miss Julia Morgan, architect of San Francisco, has completed plans for a large residence and garage at Sacramento for Mr. C. M. Goethe. Miss Morgan has also completed plans for the new Y. W. C. A. building at Pasadena to cost $150,000, and for a church on Ocean avenue, San Francisco, for the Betheny Presbyterian Society.

St. Francis Community House

Mr. Henry H. Gutterson, 278 Post street, San Francisco, is preparing plans for a community house in St. Francis Wood, San Francisco, for the property owners of St. Francis Wood. There will be an assembly hall, club rooms, lockers, showers, tennis courts, etc.

Ripon Gymnasium

Mr. Ralph P. Morrell, Odd Fellows building, Stockton, is preparing plans for a frame and stucco gymnasium for the Ripon High School. Building will cost $20,000. The same architect has completed plans for a two-story frame and plaster residence for Mr. C. M. Ferdun at Lodi to cost $25,000.

Mr. Narbett Busy

New work in the Oakland office of Mr. James T. Narbett includes an apartment house for himself to be erected at Bellevue and Staten streets, Oakland; alterations and additions to the San Pablo school; apartment house facing Lake Merritt, Oakland; residence for Mr. Oliver McDowell in Richmond and a hollow tile domestic science unit for the Richmond high school to cost $65,000.

Saratoga Residence

Mr. Warren Skillings, Garden City Bank building, San Jose, has completed plans for a $12,000 country house to be built at Saratoga, Santa Clara county, for Mr. W. B. Foster of that town. Mr. Skillings has also made plans for a Dutch Colonial residence in Palo Alto for Mrs. E. A. Flanders.

Two Steel Contracts Awarded

Contracts were awarded during the past month for two structural jobs of considerable importance. The Judson Iron Works will furnish the steel for the new Loew Theater at Powell and Post streets, for $140,000, and the Central Iron Works will furnish the steel for a five-story mercantile building at Santa Rosa for $30,000.

San Francisco College Building

Messrs. Reid Bros., California-Pacific building, San Francisco, are preparing plans for an educational building to be erected at Hayes and Pierce streets, San Francisco, for St. Sophia College. The structure will be of concrete and will cost $130,000. Excavating has started. Later a $200,000 cathedral will be built.

Branch for Bank of Italy

Architect C. E. Gottschalk, Phelan building, San Francisco, is preparing plans for remodeling the entire ground floor of the former Mutual Savings Bank building at Market and Kearny streets. The Bank of Italy has planned to open a branch for the benefit of its down town clients.

Sacramento Theater

The Paramount Company, H. L. Rothchild, president, has had plans prepared by Mr. L. F. Starks, Fruit building, Sacramento, for a $500,000 theater at "K" and "L" streets, between Ninth and Tenth streets. A $50,000 organ will be installed.

Hayward School Buildings

The Hayward Grammar School District has voted $180,000 for three new buildings and Mr. Henry C. Smith of San Francisco, has been selected as the architect. An election will be held shortly to vote on the proposed sites.

The Flagpole Hazard

Editor The Architect and Engineer, San Francisco, Cal.:

On page 108 of your September, 1920, issue appears an article entitled "The Flagpole Hazard," which the writer has read with considerable interest. Criticism is, of course, always of some value, but to be of the most value it should be accompanied by constructive or remedial suggestions. Anything which eliminates hazard either to life or property should appeal to all architects and engineers.

In connection with flagpoles on buildings there is grave danger of dry rot where the poles extend through the roof. About a year ago a 50-foot pole on a twelve-story building in the city of Portland snapped off at the roof line and luckily fell onto the roof because the wind carried it in that direction. This pole measured 12x12 inches at the base and you can imagine the danger to life and property if it had fallen into the street. Flagpole experts have a method of protecting flagpoles from dry rot at the point where the poles extend through the roof. The information they can give you on the subject would enable you to write an article which will be very highly appreciated by every architect and engineer, especially so if it is illustrated with cuts.

Yours very truly,
F. W. FARRINGTON & CO.,
By E. G. ALM.

Portland, Oregon.

Reedley High School

The Reedley Union High School District has voted $400,000 for a group of high school buildings, from plans being prepared by Mr. Norman F. Marsh, 211 Broadway Central building, Los Angeles. The group will include an auditorium, science building, domestic arts building, gymnasium with swimming pool and bowling alley, manual arts building, cafeteria and central heating plant.

San Jose Architects Busy

New work in the office of Messrs. Wolfe & Higgins, Auzerais building, San Jose, includes a five-story reinforced concrete community apartment house to cost $85,000; a frame and stucco school building at Madrone to cost $15,000; and two residences in Los Altos.

Mission School Building

Messrs. Wyckoff and White, architects of Salinas, have completed plans for a mission type school house of two rooms and auditorium for the San Ysidro School District, near Gilroy, Santa Clara county. The building will cost $25,000. Bonds have been voted and sold.

Memorial Auto Park

Mr. William Mooser, Nevada Bank building, San Francisco, is preparing plans for a memorial auto recreation park at Grass Valley, to cost $35,000 or more. There will be a clubhouse, swimming pool, tennis courts, etc.

Hollow Tile Home

The Pasadena Home for the Aged will have a hollow tile addition costing $200,000, from plans by Mr. Frederick L. Roehrig, Braley building, Pasadena.

More Anent the Dailey Investigation in Chicago

Editor The Architect and Engineer, San Francisco, California:

In your issue of June, 1921, on page 105 appears a quotation from the Chicago Tribune which appears to have been reprinted from Engineering and Contracting, which refers to certain testimony presented before the Dailey Legislative Committee who are investigating building conditions in Chicago and vicinity. The witness whose testimony is quoted is not a member of any architectural organization, and it was indeed most unfortunate that the profession was credited with the practices alleged by the witness.

I am attaching herewith copy of the June issue of the Bulletin of the Illinois Society of Architects, which I am sure if you will glance over will show you the real position of the architectural societies in Illinois to the present building situation. The Dailey Legislative Committee was appointed by Governor Small after the conditions existing in the building industry had been called to the attention of the State Legislature by our society. Our society has placed the services of its officers and committees at the disposal of the Legislative Committee, as well as of the Attorney General, State's Attorney, and the Attorney General of the United States, and our officers and committees have been called upon to render special service. We are doing everything in our power to clean up the entire situation.

Last week the writer received information to the effect that political pressure was being brought to bear upon His Excellency, Governor Small, to induce him to veto the bill which had been passed to continue the Dailey Committee as a permanent State Investigating Committee. I at once called a meeting of our Board of Directors and we invited every civic and professional organization in Chicago to co-operate with us and to immediately communicate with Governor Small to urge upon him the importance of signing the bill for and in the interests of the industry, and I am in receipt of advices from Springfield to the effect that Governor Small has signed the bill.

The Illinois Society of Architects in co-operation with the Illinois Chapter of the American Institute of Architects has always done everything that could be done to better conditions, not only professionally, but otherwise as affecting the entire building industry.

Very truly yours,

F. E. DAVIDSON.

* * *

According to the Bulletin, issued by the Illinois Society, in addition to urging the Dailey Committee to go on with its investigation, the society, through its secretary, Mr. Ralph C. Harris, has addressed a letter to the Chicago Building Trades Council, suggesting that every officer, business agent or representative in the council now under indictment be relieved until the outcome of their trials is determined. Such action, it is felt, would go a long way to restore confidence and assist in the early revival of building construction.

The Draftsman

He sits in the office with pencil and pen,
And slide-rules and playthings like that,
And maps out the work for the rest of us men,
On sketch and on blueprint and plat
He figures in millionths—or less—of an inch,
And ciphers out stresses and strains,
For the job of a draftsman is never a cinch,
And needs a fair portion of brains.

He mustn't be lazy,
He mustn't be slow,
Or doubtful and hazy
On things he should know,
He must be a craftsman
Who longs to climb high,
For that's how a draftsman
"Gets by!"

He can't do his task in a hit-or-miss way,
He'd ruin the ship if he should,
His work must be RIGHT to be worthy of pay,
And carelessness never makes good,
For bearings and pistons and axles and such
Have got to be true to a hair,
And the fellow who draws 'em can't bungle 'em much,
And hold down a drafting-room chair.

He's got to be steady
Dependable, straight,
He's got to be ready
To toil and to wait
A hard-working craftsman
Whose swelled head is gone,
For that's how a draftsman
"Gets on!"

From pattern shop through to the shipping-room floor,
His labors are potent, because
Whatever we mill or we plane or we bore
Must follow the lines that he draws,
He's figured the jobs for us fellows to do
Till never an error can lurk,
And now and again he'll invent something new
To give us a boost in our work!

He's canny and clever
And kindly and clean,
A chap whose endeavor
Is eager and keen,
A number-one craftsman,
Who works as he should,
For that's how the draftsman
"Makes Good!"

—The Washington Engineer A. A. E.

Parochial Residence

Mr. Leo J. Devlin, Pacific building, San Francisco, has prepared plans for a $25,000 parochial residence for the Archbishop of San Francisco diocese to be built at Santa Rosa. Rev. J. Long is pastor of the parish. Mr. Devlin is also making drawings for a church at Guerneville, Sonoma county, for the Archbishop of San Francisco diocese.

Personal

Mr. J. B. Stanton, formerly with Mr. R. A. Herold of Sacramento, and later with D. H. Burnham & Co., Chicago, is now with Mr. Edwin Bergstrom, architect, of Los Angeles.

Form Architects' Association

A number of prominent Los Angeles architects have incorporated under the name of the Allied Architects' Association, the object of which is to provide municipal, county, state and national governments with the highest and best expression of the art of architecture in designing, planning and building public structures. According to its 33 members the corporation is co-operative and not organized for profit.

The officers are: President, Mr. Octavius Morgan; vice-presidents, Mr. Edwin Bergstrom and Mr. D. C. Allison; directors, Mr. Myron Hunt, Mr. Reginald Johnson and the president and vice-presidents; treasurer, Mr. H. M. Patterson; secretary, Mr. J. J. Backus. The membership comprises Messrs. Octavius Morgan, Edwin Bergstrom, D. C. Allison, Myron Hunt, Reginald Johnson, J. J. Backus, Henry M. Patterson, A. M. Edelman, Sumner P. Hunt, Harwood Hewitt, Rollin Germain Hubby, Sylvanus B. Marston, Robert H. Orr, Henry F. Withey, Carleton Monroe Winslow, Garrett Van Pelt, Jr., H. C. Chambers, John P. Krempel, Elmer Grey, O. W. Morgan, Wm. M. Clarke, Alfred W. Rea, Pierpont Davis, Arthur B. Benton, J. E. Allison, W. J. Dodd, Wm. Richards, Charles F. Plummer, Gordon B. Kaufmann, H. S. Johnson, Clarence E. Noerenberg and Roy C. Mitchell.

Objects of the Allied Architects' Association are set forth in detail in its articles of incorporation, as follows:

(a) That the paramount purposes for which said corporation is formed are the advancement of the art of architecture, both as a professional and public duty;

(b) By the professional co-operation and collaboration of all its members to secure for, and to provide municipal, county, state and national governments with the highest and best expression of the art of architecture in the design and construction of public buildings, structures and improvements and at the least possible cost.

(c) To secure to its members the benefit of a common centralized and aggregated service department and organization, comprehending departments of architecture, engineering and the decorative arts and landscape development, and all kindred and allied arts, crafts and trades.

(d) By allied and co-operative effort to secure for its members the benefit and assistance of the most competent and skillful engineers, artists, designers, draftsmen, workmen, and assistants, by their common and united employment.

(e) To acquire the site for and erect thereupon a service building, or buildings, and establish therein a plant to facilitate the professional services of its members to their clients and the general public, and to that end acquire by lease, purchase or otherwise real property and erect and maintain thereon suitable buildings, laboratories, offices, studios, libraries, drafting rooms and workshops of the corporation, and generally, to lease, mortgage and convey such real estate in such manner as may be lawful for the best interests of its members.

(f) To issue bonds, debentures or obligations of the corporation from time to time for any of the objects or purposes of the corporation and to secure the same by pledge deed of trust, or otherwise.

(g) In general, to establish, maintain and carry on any endeavor, enterprise, or establishment, of the same general nature in connection with the foregoing, and thereto to have and to exercise all the powers conferred by the laws of the State of California.

Plates of Frame Construction Details

The Architectural and Building Code Service, National Lumber Manufacturers' Association of Chicago, has recently published and has ready for distribution a bound volume containing a series of plates of "Frame Construction Details." These have been published in 8½x11 size for the purpose of handy reference and convenience in filing.

Frame construction, unlike the various other types of construction used in the erection of smaller buildings, has grown from the various miscellaneous types which were developed by necessity in the days of our forefathers to the three distinct types, "balloon frame", "braced frame" and "Western frame," each of which predominates in certain sections of the country. These plates show the proper use of lumber in the three types. The valuable principles of economy and safety in construction of frame buildings are illustrated. Specific methods of fire stopping recommended as necessary to prevent the rapid spread of fire in buildings are also illustrated.

These principles and standards of construction when applied in practice will serve not only to reduce the wrong use of lumber, but encourage its proper use. This volume is invaluable to architects, engineers, draftsmen, and students of architecture, as it shows in large scale details the relationship of the various structural members and their function.

It is also of great value to contractors, carpenters and builders and the principles shown should decide many questions which are raised as to the proper method of framing a building.

Copies may be secured from the Architectural and Building Code Service, National Lumber Manufacturers' Association, 750 McCormick building, Chicago, at a cost of $1.00 for each copy desired.

Clay N. Burrell Busy

New work in the office of Mr. Clay N. Burrell, First Trust building, Oakland, includes an apartment house at Grand avenue and Jean street for Dr. J. J. Moyer to cost $26,000; a two-story frame and plaster residence at Lakemont for Mr. F. J. Cuhna to cost $18,000; a two-story reinforced concrete garage on Grand avenue near Harrison street to cost $35,000, and a two-story brick veneer residence on East Fourteenth street for Mr. G. Michaels to cost $5,000.

Piedmont Residence

Working drawings are being made by Mr. W. H. Ratcliff, Jr., of Berkeley, for a $20,000 home to be built in Piedmont for Mr. Arthur Breed.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

More Ethics!

By A. G. MOTT, Engineer
California Railroad Commission*

ONE of the fundamental objects of the American Association of Engineers is to "Raise the Standard of Ethics of the Engineering Profession," and it is thus self-evident that any discussion of engineering ethics is of intimate concern to the Association.

It has also been one of the precepts of the Association that the Engineers should take an active interest in public and civic affairs instead of remaining, as has too often been his custom, inside his own clamshell of personal interest. So a consideration of the ethics of an Engineer's professional relation to public and civic affairs is especially pertinent to the American Association of Engineers.

The particular question that has been raised is whether it is ethical for an Engineer to give gratuitously, professional advice to a municipality or other political subdivision. The answer to this question should be considered in three sub-divisions: viz., will the giving of such gratuitous advice harm or benefit the community concerned; will it harm or benefit members generally of the engineering profession, and will it harm or benefit the individual engineer giving it?

The benefit or injury a community receives from advice (which is acted upon) is independent of the money cost of such advice. The principal injury to the community comes from incompetent advice or no advice, with the result that funds are likely to be inefficiently expended, or unsuitable policies or designs adopted. The interest of the community thus requires that engineers should see that the community should not act on engineering problems without having competent engineering investigation and advice. Very frequently (especially in the smaller communities) engineering investigation is entirely omitted as the governing authorities do not realize it is necessary. Often such an error might be avoided if the engineer citizens of the community would make themselves heard individually and frequently. Any advice so given, to be beneficial, should be accurate, and thus without having made a detailed investigation usually such advice must be general and very often could be of real benefit to the community only when it pointed out the general direction and scope that a paid investigation should take.

The engineering profession can be benefitted only if more demand can be created for engineering services and by having a higher value placed on these services by the consuming public. To sell a commodity or a service the public must be convinced of the merit or value of the commodity or service, and be apprised of the fact that it is available. The consumption of many commodities is stimulated (to the benefit of all concerned) by advertising. One form of advertising frequently used by salesmen, is the distribution of free samples of the product. The samples should be an accurate indication of the grade and quality of the product. They should be given in a manner that will create a desire for a "full size package" and they should be so distributed as to call the attention of the largest possible number of consumers to the merit of the product. A few samples of engineering advice distributed to communities under conditions already outlined, will conform to the principles of sound advertising and thus benefit the profession.

The benefit to the individual engineer is usually measured by the financial consideration, the effect on his prestige (reputation) or by the additional knowledge acquired. There is another consideration that is too often neglected: that is the broadening influence due to the arousing of varied interests in life outside of daily routine, which might be described as the flavoring of existence with the spice of life. The financial and strictly professional benefits to the individual of any particular case will vary, although seldom will they be definitely negative. But "man does not live by bread alone" and the interest aroused by honorably participating in civic affairs for the general good, is a reward in itself.

*PACIFIC ENGINEER, official organ of the San Francisco Chapter.

Mechanical Engineering as Applied to the Average Architect's Practice

By JOHN D. SMALL in Monthly Bulletin of Illinois Society of Architects

REFERRING to the three methods of securing engineering services as suggested in the topic for discussion in the order in which they are given, it appears to the writer than the owner is entitled to full engineering services when the architect takes the job at 6 per cent commission in which case, the architect is not justified in calling in contractors to furnish this information. In the first place, the contractor that furnishes the information, as a rule, does not get the contract as the competitive method of bidding generally results in the low man securing the work which is not always the one who furnishes the engineering data, except of course, when an understanding may have been had whereby the man who furnishes the information would

automatically get the job. If, however, fair competition is secured, the man who is called in would rarely get the job as he knows too much about it and would probably bid higher than the one who had not gone into it so carefully. Furthermore, it may appear on the surface as if the architect or the owner is saving the engineering fee, but it is more likely that the owner will, in the end, pay an equivalent in substitutions of material or in having the job skinned.

An architect naturally obligates himself to a contractor when he accepts engineering services gratis and the owner should have the benefit of competition which can best be secured on a plan and specification, executed by a consulting engineer either engaged by the year in the architect's own organization or an outside consulting engineer operating independent of the architect. A number of architects have a mechanical engineer in their organization while others engage an independent consulting engineer either of which methods are certainly more satisfactory to all concerned than to tie up with contractors.

There is another phase to this subject that has not been mentioned, but which is really more of a problem than the contractors acting in an engineering capacity, namely, the services offered by the vacuum specialty people and to a large extent accepted by the architects. This method is even worse than accepting the contractor's assistance for the reason that the specialty people have some apparatus to sell. When a specialty company furnishes plans and specifications it is a foregone conclusion that their devices will be used although I believe arrangements are often made whereby these concerns are to be paid an engineering fee in case their apparatus is not used and if it is used, the fee is refunded. This is certainly not professional from an architect's standpoint in serving his client. On the other hand there are doubtless a number of your members who are getting perfectly satisfactory results from contractors who lay out the work and install the same. Free engineering services is a pernicious practice and is certainly harmful to all concerned and should be tabooed by architects as a whole.

The subject resolves itself into a question of the architect's policy in his office practice. Fortunately for the consulting engineers there are some architects who would not think of accepting the services of contractors or specialty people and they doubtless have settled the question that they are serving their clients to the best advantage when they turn over the work to an engineer who does nothing else but design work of this character and devotes the necessary amount of time to a given problem to get the best results. True, consulting engineers are not perfect any more than architects are, nevertheless, when the two co-operate there is no question but that better results can be obtained than in any other way. Of course the architect and engineer must work harmoniously and if proper regard is given each to the other's ideas, the results will be just what you wish them to be.

Realizing the conditions existing in the engineering field, the Chicago Association of Consulting Engineers was organized in February, consisting, at present, of ten charter members. It is needless to say that we are opposed to contractors and manufacturers acting as engineers for architects and are endeavoring to minimize this practice as much as possible, believing that the professional mechanical engineers should rightfully provide these services. The writer can testify to a most satisfactory experience extending over a period of eight years in serving a number of your members in the capacity of consulting mechanical engineer and is sure that the right combination of architect and engineer will, in the long run, be more satisfactory to the architect as he will be operating along strictly professional lines and the owners should pay a commission which would enable the architect to furnish the proper engineering services. My object in mentioning this is that I have been told by architects that they could not afford to pay for engineering services as they took the job at a price which would not permit of same although they would have preferred to engage an engineer. Furthermore, where a number of architects are soliciting a given job, the architect who does not pay for engineering services has the advantage in offering his services at a lower commission which is not fair to the architect who has to charge more in order to render full service.

As to the third method suggested in the topic for securing engineering services, that of a service bureau, I do not think this is practical for large jobs where the engineer should give the work his personal attention and where close co-operation with the architect is necessary. There are, however, a large number of smaller jobs for which such a bureau might be workable. In my own practice I charge the same commission on small and large jobs and while the fee on the small jobs is not commensurate with the work required, yet when the same architect turns over his large work, the fee is equalized.

Now as to a general service bureau, I do not believe this would appeal to engineers, but if the architects would call in the consulting engineer rather than the contractor or manufacturer, I believe the engineers would be glad to give such information as the architect requires on the smaller jobs on a strictly consulting basis for a nominal fee and let the architect's draftsman execute the plans under

(Concluded on page 126)

AIRPLANE VIEW, UNION CONSTRUCTION PLANT, OAKLAND

Union Construction Company Enters Building Field for Structural Steel

WITH the revival of big building construction in San Francisco and the Bay Region, comes the interesting announcement of the Union Construction Company that it has entered the building field and will build structural steel frames for theaters, office buildings, apartment houses, etc., in addition to continuing its original contract work for gold dredges, in which latter pursuit the Union company is a pioneer. Steel bridges, tank and pipe work and all classes of general machinery will give the company a wide field in which to keep busy its immense plant in the Key Route Fell, Oakland.

For nearly fifteen years Mr. Walter Johnson, president; Mr. Harry Peake, vice-president and general manager, and Mr. W. H. Christie, secretary, have been associated in the construction and operation of gold dredges and placer mining machinery. When the call went out for more ships, these men responded, and to their courage and grit is due the success of the Union Construction Company.

In the face of great opposition, arrangements were completed early in 1918 for leasing sixty-four acres of marsh land from the city of Oakland, so that Mr. Peake and Mr. Johnson were free to go to Washington for the purpose of securing contracts. They were told that there was not one chance in a million, but, as Mr. Johnson said, "We took that chance," and after three months of anxious, persistent work brought home a contract for ten vessels, to cost approximately eighteen million dollars. The contract was signed just three years ago, and two days later the first pile was driven for the plant. The difficulty of dredging a suitable channel so that ships could be taken out, of filling a large portion of the sixty-four acres with sand dredged from the bottom of the bay, and of securing the necessary machinery and equipment can hardly be overstated, but all these things were done, and today the Union plant stands as a monument to the courage and energy of its founders.

On October 5th, 1918, the keel was laid for the steamer "Hatchie." The work was carried on with the help of machinery placed on temporary foundations out in the open, and the company found itself in the very difficult position of constructing its plant and ships at the same time.

OFFICE BUILDING, UNION CONSTRUCTION COMPANY, OAKLAND
Lloyd A. Rally, Architect

The difficulty of getting skilled men to carry on shipbuilding and experienced men to supervise them can easily be understood on account of the fact that all of the other yards were rushing at top speed, and already had in their employ every available experienced man. Since that time the company has constantly improved its equipment and increased the number of its buildings, so that today it has one of the most complete yards on the coast.

During the year 1920, with an average working force of 2694 men, the company delivered nine ships, representing nearly thirty deadweight tons production per

VIEW OF FABRICATING SHOP, UNION CONSTRUCTION COMPANY, OAKLAND

INTERIOR VIEW OF MACHINE SHOP, UNION CONSTRUCTION COMPANY, OAKLAND

man per year, a record which few yards can equal. There still are under construction nine ships, and as the work on these will soon be completed the management naturally is desirous of keeping the big plant in full operation. To this end plans have been formulated to build steel frames for class A buildings, bridges, etc. A competent estimating department has been created and Mr. E. G. Burr has been placed at the head of the sales department with instructions to get the business. Several good contracts have already been closed. The company has a San Francisco office at 604 Mission street.

INTERIOR VIEW OF FABRICATING SHOP, UNION CONSTRUCTION COMPANY, OAKLAND

Electrical Department

Adequate Wiring for a Small House

THE extensive use of electricity in American homes at the present day creates a demand for a sufficiency of electrical connections and outlets which a few years ago were not considered necessary. Modern lighting requirements alone demand a greater number of outlets because of the increasing realization on the part of the public at large of the great convenience and comfort of local lighting placed usefully in addition to sources of central illumination. Add to the lighting requirements the connections needed for the numerous labor saving electrical devices in use in the average American home and the need of comprehensive wiring and outlets is evident.

Surprising, however, is the general lack of appreciation of these needs on the part of the designer and builder of houses, and even the electrical contractor is archaic in his ideas. The National Electric Light Association has given study to this condition, and the example of an adequately wired small house here described is presented by them.

Sometimes the attitude of an electrical contractor-dealer is not only one of indifference, but actually reactionary in character. For example, let us take a case which occurred some time ago. A man building a house for his home had come to realize that artificial light was really an important factor in making a house a home and he had laid out the wiring in accordance with his ideas of convenience and adequacy. In fact, the wiring diagrams were those shown in the following illustrations. In going over the plans with an electrical contractor-dealer the latter suggested the elimination of an outlet switch here and there until a total of ten had been recommended for elimination. When the contractor had finished his consideration of the plans, the householder asked why a contractor should assume an attitude which appeared to operate to his disadvantage. He replied to the effect that he always had the interest of his client in mind, but did he? He was unknowingly placing a blight upon that home, but then, the electrical contractor has not learned what an important link he is in the chain which leads to a pleasant home. The householder, who knew that the cost of the outlets was insignificantly small compared with their importance, insisted that the elimination of these outlets at a saving of a few dollars was not to his advantage. In fact, he correctly stated that such a procedure would really result in a blight upon the home which would exist as long as the house existed. Furthermore in a few months the house would be completed and the contractor-dealer would then attempt to sell the householder various electrical devices such as a heater, a toaster, a flat-iron, a vacuum cleaner, portable lamps, etc., each of which demands a convenient baseboard or wall-receptacle for connecting it.

Let us take up the wiring of a middle class home which was built three years ago. Sufficient time has elapsed to establish a justification of the various outlets and controls and to make it possible to appraise the wiring plans. An inspection of the accompanying plan will reveal an adequacy of outlets and switches seldom approached and rarely equaled in a middle class home of similar size, but it may be stated that the existence of each outlet and switch has been justified. This is proved by the fact that none of these would be dispensed with for much more than present cost of installation during construction.

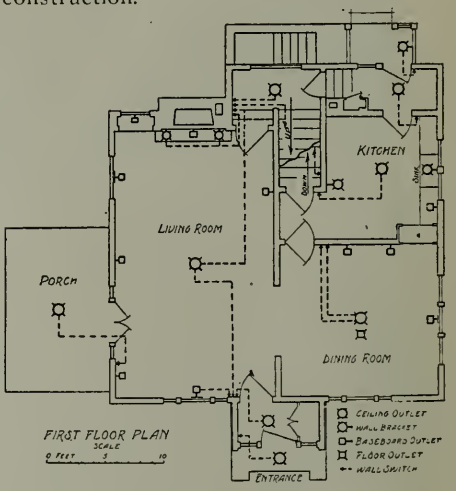

FIG. 1. ADEQUATE WIRING FOR THE FIRST FLOOR

Beginning with the first floor plan, Fig. 1, let us analyze the living room. No ceiling fixtures have been installed but a

two circuit outlet was provided for possible future demands. Switches control these two circuits respectively at the main entrance and at the stairway as shown by the dotted lines. However, not intending to install a ceiling fixture, the baseboard outlet at the front of the room is attached to a switch at the front entrance. In order to have artificial light on entering from the stairway at the opposite end, the pair of brackets which flank the mantel are connected to a switch at the stairway entrance. The arrangements of the furniture such as piano, library table, and davenport were carefully studied before deciding upon the locations of the outlets, the switches, etc. A table-lamp is provided for at the front end. In the corner on the left is an outlet to which is attached electrical equipment (including a small lamp) of a modern phonograph. On the mantel is an outlet for decorative candle-sticks and at the left is another outlet for a "beauty-spot" of light. The remaining baseboard outlets are utilized respectively for a floor-lamp near the piano (on the wall at the right), for a floor-lamp at one end of the settee (on the left center of the room usually) and for a miniature floor-lamp at the other end. The latter may be moved close to a chair and thus serve as a portable reading-lamp. Every outlet is in use in this room and some of them do double duty.

In the dining-room a two-circuit outlet is found in the center of the ceiling. This supplies a fixture which emits a well-controlled downward component of light illuminating the table predominantly and an upward component for a moderate general illumination. An outlet in the floor under the table may be used for electrical devices on the table. One of the baseboard outlets supplies a pair of candlesticks on the buffet; the others are used for electrical apparatus, and are also available for any special lighting purpose.

In the kitchen an electrical outlet in the center of the ceiling is controlled by a wall-switch conveniently located. The combination-fixture is a wall-bracket at the left near the stove. Another bracket with a pendent shade is placed over the sink and a wall-receptacle is provided for electrical devices. If windows do not permit the use of a bracket, the fixture over the sink can be suspended from the ceiling. In the rear hall and on the rear porch are ceiling prismatic balls controlled by switches as shown. At the front entrance is a pendent lantern and in the vestibule is a ceiling-husk, both being controlled by switches. On the porch at the left is a ceiling fixture consisting of a prismatic ball and controlled by a switch at the side entrance.

Ceiling outlets are installed in the stairways, each being controlled by a three-way switch. The wiring diagram of the second floor is shown in Fig. 2. Here again the best arrangements of furniture were determined before the outlets were located. For example, in the front bed-

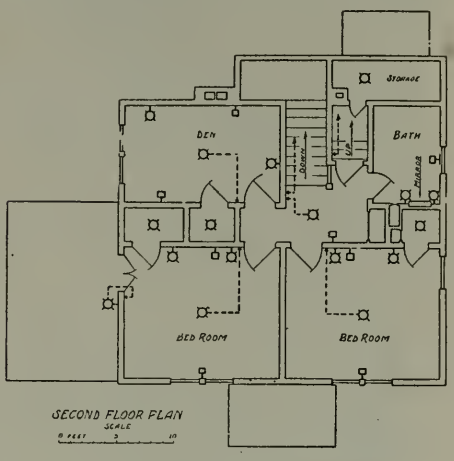

FIG. 2. ADEQUATE WIRING FOR THE SECOND FLOOR

rooms the windows were located in this manner and in each of these twin beds may be used if desired without any interference with windows. Each room is wired for a ceiling outlet controlled by a switch at the entrance. A baseboard outlet is available between the beds at the windows in the front bedrooms. This serves for connecting a portable lamp and on certain occasions affords a connection for electric devices. Two wall-brackets are provided, one on each side of the dresser, and a baseboard outlet is installed for connecting dresser lamps. In case only one bed is used the other baseboard outlet may be used for the dressing-table.

The den, which in some cases would be a small bedroom, is supplied with two brackets and two baseboard outlets and the ceiling is wired for an outlet in the center controlled by a switch at the door. All closets are supplied with pendent lamps and pull-chain sockets.

The bathroom mirror is flanked by small brackets and a wall-receptacle near the floor is provided for the connection of electrical devices. In the upper hall is a baseboard outlet to which a portable lamp may be attached for the purpose of supplying a decorative touch to this otherwise unfurnished space. However, the possibility of using this outlet for this purpose was not sufficiently evident to justify its installation, but the fact that it affords a place for connecting a vacuum cleaner which can serve all rooms on this floor without disconnecting resulted in the installation of this outlet. For the latter purpose this outlet has well proved its worth. In fact, outlets may often be justified on the basis of a dual capacity of this character.

In the basement, Fig. 3, the wiring is likewise adequate. A switch near the kitchen entrance to the stairway controls the lamp which illuminates the stairs. A switch at the bottom of the stairs con-

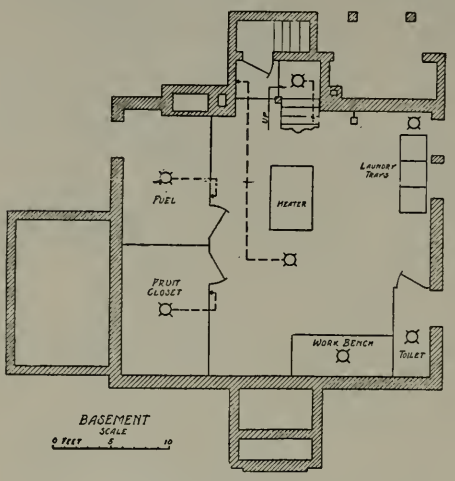

FIG. 3. ADEQUATE WIRING FOR THE BASEMENT

trols a ceiling-lamp near the heater and this immediately supplies enough light to make it possible to distinguish any object in the basement. Above the laundry-trays and somewhat to one side is a ceiling socket with a pull-cord snap-switch and on the wall is an outlet for connecting a washing machine, a flat-iron, or other electrical device. Over the work-bench is a pull-chain socket and a similar one is in the toilet. The fuel-bin and fruit-closet each contain a ceiling-outlet controlled by an indicating switch installed in each case outside. These outlets are conveniences which add much to the satisfaction of a basement and make most basements appear by comparison as dingy caves whose chief function is to contribute bumps upon the head and shins of the invader.

A comparison of these wiring plans with those of houses costing several times as much would suggest extravagance in this case, but it is confidently affirmed that every outlet and switch has a right to exist. The actual increase in the cost of this adequate lighting-plant is an insignificant part of the entire investment. The house possesses possibilities in lighting which are always a source of satisfaction to the householder. These wiring plans are considered adequate, but in no sense extravagant. They represent artificial lighting, which ranks third in importance in this house, as it should. It is superseded in importance only by the house or enclosure, and by the heating plant. By comparing these diagrams with the wiring of the middle-class homes in general, it is evident to those interested in bringing the possibilities of lighting to the householder that each must do his part if this interval between the prevailing inadequate wiring and reasonably adequate wiring is to be spanned.

A simplified summary of the outlets in these wiring plans is presented for the sake of convenience:

Living-room
Size 14 feet by 24 feet.
7 receptacles for portable lamps and other electrical devices.
2 brackets over mantel.
1 two-circuit ceiling outlet (unused).
2 switches for ceiling fixture placed respectively at front and stairway entrances (unused).
1 switch at stairway entrance for mantel brackets.
1 switch at front entrance for portable lamp.
1 switch for ceiling fixture in vestibule.
1 switch for ceiling fixture on porch.

Vestibule
1 ceiling fixture.
1 switch for lantern at entrance.

Entrances
1 ceiling fixture on side porch.
1 lantern at front entrance.
1 ceiling fixture on rear porch.

Dining-room
1 two-circuit ceiling fixture (three circuits provide greater possibilities).
3 receptacles in baseboard for candlesticks on buffet, and other electrical devices.
1 floor-receptacle wired to double or triple socket underneath table at convenient location.
2 switches for ceiling fixture.

Kitchen
1 ceiling fixture.
1 combination-bracket near range.
1 bracket over sink.
1 receptacle for electrical devices.
1 switch for ceiling fixture.
1 switch for fixture in basement stairway.
1 switch for ceiling fixture in rear hall.

Rear Hall
1 ceiling fixture in rear hall.
1 switch for ceiling fixture on rear porch.

Stairway
1 ceiling fixture on landing.
1 three-way switch for this fixture controlled at top and bottom of stairs.

Upper Hall
1 ceiling fixture.
1 three-way switch for this fixture controlled at top and bottom of stairs.
1 receptacle for portable lamp and especially for vacuum cleaner.

Front Bedroom
(duplicate wiring for other front bedroom.)
2 wall-brackets (individual switches on these fixtures and light-sources about six feet above floor).
2 receptacles for portable lamps or fixtures and for other electrical devices.
1 ceiling fixture.
1 switch for ceiling fixture.

Upper Porch
1 bracket controlled by switch in adjacent room.

Den
2 receptacles.
2 brackets (may be eliminated if ceiling fixture and portable lamps meet the desires).
1 ceiling fixture (unused).
1 switch for ceiling fixture (unused).

Closet
(duplicate wiring in other two closets).
1 pendent pull-chain socket.

Bathroom
2 brackets with pull-chain sockets. (One on each side of mirror respectively and light-sources at height of about 65 inches above floor.)
1 receptacle (for electrical devices).

Third Floor
Switch at door on second floor controls fixture on third floor which illuminates stairway.

(Continued on page 118)

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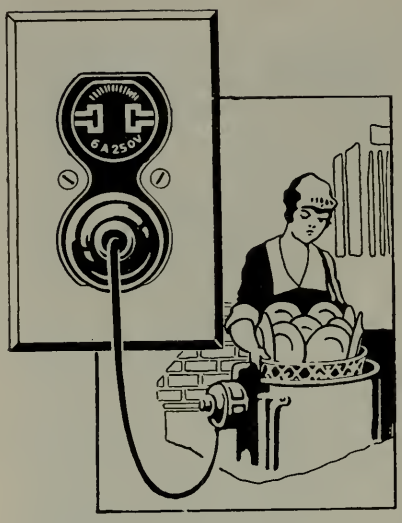
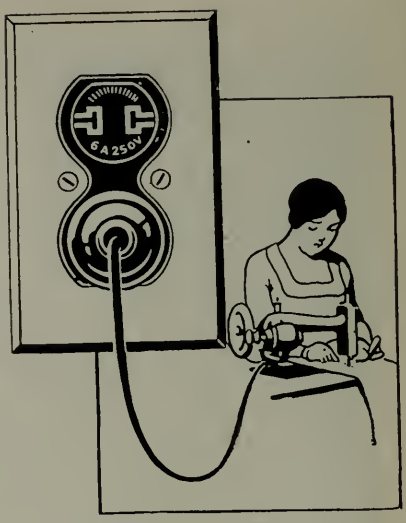


"CONVENIENCE OUTLET" FOR DISHWASHER



"CONVENIENCE OUTLET" FOR SEWING MACHINE

Third Floor (Continued)

On landing is entrance to storage space containing pendent socket.

Each of two rooms on third floor provided with ceiling outlet and baseboard receptacle.

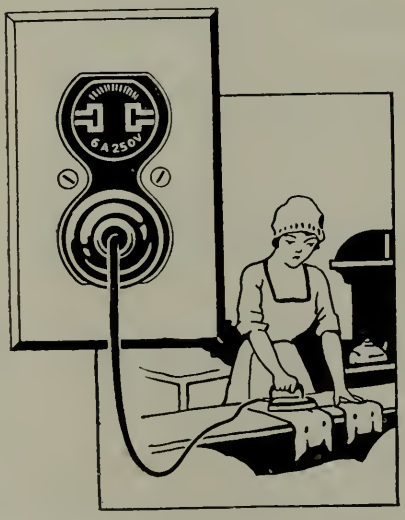
Basement

1 ceiling fixture at bottom of stairs.
1 ceiling fixture in center of basement near heater.
1 switch at bottom of stairs controlling this fixture.
1 ceiling fixture (angle reflector) over laundry-trays.
1 pull-cord snap-switch on ceiling controlling this fixture.
1 wall-receptacle near laundry-trays for electrical devices.
1 pendent socket (with self-contained switch) over work-bench.
1 pendent pull-chain socket in toilet.
1 pendent socket in fruit closet.
1 indicating switch outside fruit closet.
1 pendent socket in fuel-bin.
1 indicating switch outside fuel-bin.

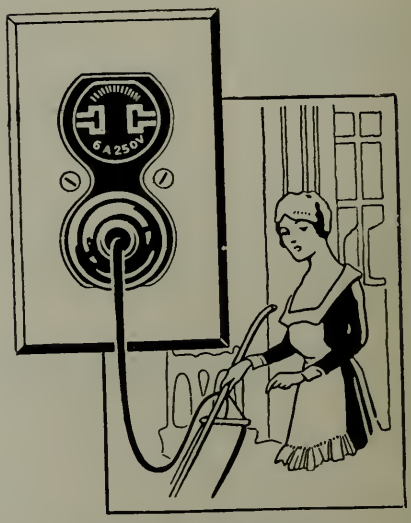
Garage

1 ceiling fixture.
1 switch at entrance controlling ceiling fixture.
2 wall-receptacles.

(It is convenient to have a master-switch for garage installed in basement near meter or at any satisfactory location. This is sometimes a safety measure and also affords convenient control of heater, charging apparatus, etc.)



"CONVENIENCE OUTLET" FOR FLAT IRON



"CONVENIENCE OUTLET" FOR VACUUM CLEANER

The Making of Pure Iron in an Open Hearth Furnace

At a recent meeting of the American Iron and Steel Institute, New York City, Mr. W. J. Beck, director of research at "Armco," explained the technical difference between modern iron making and steel making and told of the development of commercially pure iron by the open hearth furnace process.

"It cannot be questioned," said Mr. Beck, "that there has always existed a demand for the purest obtainable irons. This demand has held steadfastly in the face of rapidly developing steel producing processes. The steady importation of Norway and Swedish irons throughout our entire metallurgical history up to the outbreak of the war in 1914 is sufficiently indicative of this fact. These foreign irons, however, that had to be laboriously worked down by a charcoal or puddling process, were not suited to the large-scale tonnage operations which are made imperative by American conditions of labor and industry. It is natural, therefore, that our metallurgists should have been led to the consideration of adapting the open-hearth steel furnace to the manufacture of iron of at least an equal degree of purity as those types which were imported from overseas.

"The first experimental heats were made by the American Rolling Mill Company at Middletown, Ohio, in a 35 ton furnace, and they were nursed and watched with the most anxious care day and night. Continuous progress in the art was made until finally it was proved possible to reduce the fire ordinary impurities of iron (carbon, manganese, sulphur, phosphorus and silicon) to the point at which in the aggregate they did not exceed fourteen-hundredths of one per cent. At the same time special methods had to be studied to attain the maximum degree of degasification and the proper deoxidation.

"As the experimental work progressed it was found that there were considerable differences in the practice of producing commercially pure iron as compared to steel practice, which materially added to the cost. In the first place, it required several hours longer to make an iron heat than a steel heat, and the final temperature of the metal was 200 degrees Fahrenheit higher than a heat of steel. Another marked difference was also found between the percentage yield of metal as compared with the percentage yield when the steel was made.

"Several years were required to develop this pure iron and for this reason the final and successful result was the occasion for much congratulation among the workers. A new metal with many unusual properties, had been given to the world."

This "Armco" Ingot Iron has been manufactured in large tonnages since 1907 and is put to many uses where resistance to corrosion is desired. Because of its purity it is also largely used in the welding and enameling business.

California State Bldg., San Diego, Calif.

Bay State Protection

The architect's ideas of beauty are faithfully carried out by Bay State Brick and Cement Coating. And it protects the buildings he creates. It makes all buildings of brick, cement and stucco proof against sun, rain, and dampness. Many leading architects specify Bay State. Write for samples in white and colors and booklet No. 43.

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Code of Ethics

Adopted by the National Association of Builders' Exchanges

SECTION 1.—We understand ethics to mean a declaration of principles, and that members of this Association shall regard themselves as being engaged in a profession in which there is a well-defined duty and obligation toward the public and themselves. The profession demands that the members use every honorable means to uphold the dignity and honor of the same, to exalt its standards and to extend its spirit of usefulness.

SECTION 2.—Every member should be mindful of the public welfare, and should participate in those movements for public betterment in which his training and experience qualify him to act. He should support all public officials and others who have charge of enforcing safety regulations in the rightful performance of their duty, and should carefully comply with all the laws and regulations touching his profession, and if any such appear to him unwise or unfair, he should endeavor to have them altered.

SECTION 3.—Members shall not falsely or maliciously injure, directly or indirectly, the business, reputation or prospects of a fellow-member, or in any other manner attempt to supplant him after definite steps have been taken toward his employment or toward the letting of a contract to him.

SECTION 4.—Members should work in harmony with each and every one interested in building construction work, and on each individual contract shall consider the far-reaching effect of fair dealing with the owner, the architect and others interested—striving to bring into general practice better co-operation and a better understanding of relations toward each other.

SECTION 5.—All Exchanges and Associations shall be scrupulously careful that their rules, regulations and articles for the government of members do not violate the provisions of National or State laws against combination; and members shall, in this sense, respect the rules and other articles of the Exchange or Association in any and all localities where they are competing for work or doing work.

SECTION 6.—Members shall infer that the owner or architect, or both, are competent to select the bidders from whom they desire bids on construction or repair projects, and that it would be unethical to submit a bid on any work unless invited to do so; forethought on the part of the owner or the bidder or his agent as to the competency and responsibility of the bidders invited enters into this question; consequently, no bidder's bond or certified check shall be required, and an award on the work shall be expected to be made to the lowest bidder.

SECTION 7.—Bids shall be offered only when a time and place have been designated, and they are to be opened in the presence of the bidders, or their representatives, and shall be open to inspection by any one bidding on the work.

SECTION 8.—A general bidder having been awarded a contract involving sub-bids, shall award that particular portion of the work to the subcontractor whose bid was used as a basis for the general bid.

When writing to Advertisers please mention this magazine.

Copyright, 1921, by National Terra Cotta Society *Drawing by Hugh Ferriss*

Sales and Service Building
PACKARD MOTOR CAR CO. OF PHILADELPHIA
Cream matt glazed Terra Cotta ALBERT KAHN, Architect

NATIONAL TERRA COTTA SOCIETY is a bureau of service and information. Its publications cover not only the technical and structural use of the material but show, as well, examples of its application to buildings of various types.

Brochures of specific value, as indicated by their titles, will be sent to architects on request addressed to National Terra Cotta Society, 1 Madison Avenue, New York, N. Y.

The School The Theatre The Garage
The Store The Bank

These brochures consist of a selection of illustrations, with text and comment, showing Terra Cotta buildings of the respective types.

Terra Cotta—Standard Construction
A valuable Technical Reference Work for Architects and Engineers.

Terra Cotta Defined
This new booklet, primarily intended to inform the layman, will nevertheless prove interesting to architects who like to review buildings the country over.

UTILITARIAN ARCHITECTURE

TO clothe the strictly utilitarian building in architectural forms which will make it attractive, and hence more profitable, is today one of the greatest demands put upon the architect.

This problem is particularly acute in such buildings as factories, sales buildings, service stations, and public garages brought into being by the rapid development of the automobile industry.

In The Literary Digest for May 7th, 1921, National Terra Cotta Society utilized a page to tell more than a million readers of the difficult problem presented to the architectural profession, as well as of the part played by Terra Cotta in its solutions.

TERRA COTTA

Permanent *Beautiful* *Profitable*

SECTION 9.—General contractors and subcontractors shall file true copies of their bids with their Exchange or Association before the time set for opening. Such copies shall be held unopened until one hour after the original bids are opened by the owner or architect, and shall then be opened and tabulated by the secretary, and be available for examination by those bidding.

SECTION 10.—Members shall discourage the practice on the part of the architect in asking for alternate bids, provided, however, that this section shall not be interpreted as prohibiting the specification and use of substitute materials, or methods of construction, or methods and materials in every way equal to those which were specified for the original bid.

SECTION 11.—Where specification requirements call for unit price, members in bidding shall declare that the unit price shall govern only where conditions of work and price remain the same as existing or known at the time of bidding.

SECTION 12.—Competitive bids submitted by invitation shall be subject to compensation to each and every bidder from the owner, or the architect, or both, in the event of no award of the work being made to those bidding.

SECTION 13.—Members shall in no instance pay for the use of plans, excepting where a charge for plans is stipulated in bidding conditions.

SECTION 14.—Members shall discourage the practice of making a deposit for the use of plans in making estimates.

SECTION 15.—Members shall be mindful of the interests of the architectural profession, and should in every way discourage the making of preliminary sketches and estimates for prospective builders.

SECTION 16.—Members shall encourage the practice on the part of the architect on including in the specifications under each heading all of the work of each trade.

SECTION 17.—Members should make every effort to extend the use of the Standard Contract Documents of the American Institute of Architects, their third edition, without modification or change.

Face Brick Bungalows and Small House Plans

A portfolio of bungalow and small house plans has recently been issued by the American Face Brick Association, Chicago, presenting in a series of four separate folders of 3 to 4 room, 5 to 6 room, and 7 to 8 room plans prepared by thoroughly trained and experienced architectural skill. The plans and working drawings are obtainable at nominal prices. The designs all call for brick construction and the exteriors are as attractive as the interiors are practical.

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for apartment houses, schools, churches, stores, office buildings.

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The Closed Shop

DISCRIMINATION in trade and unfair competition are forbidden. There are Federal laws against these things; and these laws are enforced. But there is another form of discrimination and one that has forced itself into the limelight of late. Be it said, however, that it is not called discrimination or restraint of trade. It is called the closed shop.

When one hears of the closed shop one immediately knows that discrimination is implied. The closed shop means that nonunion workers are discriminated against. It means that two different cliques of workers, the one organized and the other unorganized, are at war, that the organized workers are pitted against the workers that are unorganized. It means that by fear and threat the organized workers are interfering with those who are just as much entitled to earn a living as are they that are organized.

The closed shop is discrimination and discrimination of the worst sort. The closed shop is contrary to all that is constitutional, all that is free, all that is fair.

Our Constitution says that the majority shall rule. The closed shop means that the

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Estabrook School, Oakland.
Departmental School, Modesto.
Modesto High School Additions (three bldgs.)
Dental College, U. C. Hospital.
Chemistry College, University of California.
McChesney School, Oakland.
Courtland High School, Courtland.
Berkeley Deaf and Dumb Asylum.

HOSPITALS

Assembly Hall and Convalescent building, Agnew State Asylum.
University of California Hospital.
Sonora Hospital.
Alameda City Tuberculosis Hospital (three buildings)

BRIDGES, TUNNELS, PIPE LINES, ETC.

Soquel Ave. Bridge, Santa Cruz.
Paynes River Bridge, Red Bluff.
Samson Slough Bridge, Red Bluff.
San Lucas Bridge, San Lucas.
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Eight Story Office Bldg. for Messrs. J. D. and A. B. Spreckels.
Alterations to Claus Spreckels Bldg.
Eight Story Physicians' Bldg., San Francisco.
Machinery Exposition Bldg., Stockton.
Olympic Club Addition, San Francisco.
Carnegie Branch Library, San Francisco.
State Armory, Stockton (8 stories).
Barracks No. 45, Benicia.
Hunt Bros. Warehouse, Hayward.
Rodeo, Eighth and Market Sts., San Francisco.
Festival Hall, P. P. I. E.
Manufacturers' Bldg., P. P. I. E.
Enlisted Men's Club, P. P. I. E.
Tait's Cafe, at the Beach.
Winter Garden.
Dreamland Rink.
Residence for C. A. Henry.
Residence for Jas. Rolph, Jr.
Eagles' Hall.
Washington Hotel.
Hotel Royal, Oakland.

organized workers rule; that unorganized workers cannot work there. Organized labor represents about 4 per cent of the total population. Is that majority rule?

Every man is worthy of his hire. Every man, union or non-union alike, is entitled to earn a living as best he can. The closed shop is a shop where you are forbidden entrance, where you are ostracized and where your peace of mind may be in jeopardy unless you join the ranks of the union. The open shop is a shop where the only thing that counts is whether a man can deliver the goods. The open shop does not discriminate against union workers. It excludes no one from earning a living or more. The open shop is free, constitutional and just.

These reasons explain in part why, employer and worker have so often opposed the closed shop; and why there is such a marked movement at this time to abolish it. This movement is not on the part of the capitalists and employers alone. It is sponsored by hundreds of thousands of toilers who have the right to earn an honest living as best they may.

Trade unionism and the closed shop are not synonymous, although the latter depends upon the former. We believe that trade unionism—it has done more for the uplift of the workers than any other factor, perhaps—might be more safely and surely founded were the closed shop abolished.

Every man is entitled to form affiliations so long as their object is not illegal. Every man is entitled to a job that he is fitted to hold. The closed shop robs him of that right. The closed shop is contrary to the spirit and the interests of America. The sooner that fact is recognized the better for the country in general and the unions in particular.—INDUSTRIAL POWER.

A Book on American Walnut

The American Walnut Manufacturers' Association has published an attractive book describing "American Walnut, the Choice of the Master Craftsman."

This book gives a record of the use of walnut from earliest times down to the present. The use of walnut has been world-wide and has covered several centuries' time. Therefore, the story of walnut is really the history of high grade furniture and artistic interior woodwork through the changing classic periods, marked by styles set by royalty or by master builders.

The information has been gathered from many books of authority and is considered to be authentic. For the person who has not the time nor the opportunity to read a mass of literature on the very interesting subject of home furniture, the book with its condensed information will give a substantial groundwork for acquiring accurate information and true appreciation of what is best in furniture and interior woodwork.

Largest Elevated Water Tank in California

The inner surfaces of this tank, located at Merced, and the property of that city, are coated with

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The outer tank surfaces and supporting structure are coated with

BITURINE SOLUTION

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CONCRETE DUST WILL RUIN

Your Clients' Machinery, Merchandise and Men

Architects and engineers have investigated Lapidolith, the liquid chemical dustproofer and hardener of concrete floors.

They know by experience that Lapidolith is needed to finish concrete—to complete the crystallization of the cement so that it shall hold the sand firmly imbedded and make the mass granite-like and serviceable, even under the abrasion of heavy trucking.

LAPIDOLITH
TRADE MARK

is readily flushed on new or old concrete floors. It is totally unlike integral hardeners or top dressings or paints because it chemicalizes—crystallizes the binding element, the cement and forms a new granite-hard material.

Cemcoat

the durable Mill White, Washable, of exceptional covering capacity, Gloss, Flat and Egg-shell, also all colors.

Lignophol

the modern wood preservative gives new life to old or new wooden floors.

With 30,000,000 square feet of concrete floors lapidolized in 1918 there is good reason for every architect and engineer specifying Lapidolith for every concrete floor job.

See page 340 in Sweet's Catalogue

Write for sample, testimonials and specification form.

L. Sonneborn Son, Inc.

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San Francisco
Seattle

Mechanical Engineering as Applied to the Average Architect's Practice

(Concluded from page 109)

the engineer's instructions with the understanding that the architect would turn over his large work on a regular commission basis.

I believe that many architects get the habit of calling in contractors on their small jobs and continue the practice on the larger work where they could better afford to pay. I would suggest that a committee of the Illinois Society of Architects be appointed to meet with a committee from the Chicago Association of Consulting Engineers to discuss this problem of handling the smaller buildings as it is a matter that interests both organizations which will eventually develop into a greater problem.

In conclusion I think I voice the sentiments of the other members of our association when I urge your society to discourage the practice of accepting free plans or engaging any but professional engineers.

I wish to express the appreciation of our association in having the opportunity to express our views on this subject.

"Another One"

One of the latest "styles" of engineering which has manifested itself, is the "Advertising Engineer." There is only one other kind of an engineer which we might look for and that is the "Culinary Engineer."

Recently a quarter page advertisement appeared in the daily paper boldly proclaiming the entrance of an advertising firm of national recognition into the realm of Engineering. They termed themselves "Advertising Engineers."

Just why they should choose to attach such a common term to "Engineer" is hard to say. —PACIFIC ENGINEER.

Mr. Knoll Has Much Work

Mr. A. H. Knoll, architect in the Hearst building, San Francisco, has completed plans for a three-story and basement frame, stucco and brick veneer apartment house to be erected on the southeast corner of 12th avenue and "C" street, San Francisco, for Mr. Otto E. Anderson at an estimated cost of $38,000; also for a three-story frame and plaster apartment house on the south side of Clay street, east of Franklin, San Francisco, for Mr. J. E. Merrill, to cost $30,000; also a three-story frame, stucco and brick veneer apartment house on "C" street, east of 12th avenue, San Francisco, for Mr. O. E. Anderson, et al., to cost $26,000; and a two-story frame flat building on the west side of 17th avenue, north of "A" street, San Francisco, for Mrs. A. H. Knoll.

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Eliminates Glare and Eyestrain

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RADIANTLIGHT gives you 49 per cent more light on working surfaces than a bare lamp.

Enclosed and dust-proof. A permanent highly polished reflector inside the bowl and protected from dust. A reflector which is easily removed and cleaned. A reflector so focused as to direct the light to working plane, without glare. A reflector that directs the light rays as scientifically as the headlight of your automobile. No shadows, rings or spots of light on ceiling.

Demonstrations cheerfully given.

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We are a Christmas Tree

Ole Hanson, the fighting mayor of Seattle, upon returning from a tour of Europe, says:

"They are lined up in Europe by the hundreds of thousands, waiting for an opportunity to get into the United States; thousands of undesirables who would have been here knocking at our gates months ago if there had been ships enough to carry them.

"In Warsaw there are 100,000 standing in line in the hope of getting tickets and passports. In the United States politicians have brought pressure to bear upon the State Department to pass hordes of undesirable aliens into this country.

"After seeing what I saw and hearing what I heard, I believe more firmly than ever that we sould shut off immigration until we have enacted proper laws that will protect us from the undesirable invasion.

"None of the undesirables that are planning to come here will get out into the country, where their labors can be utilized. They have made up their minds to stay in the large centers of population, and there they will stick as soon as they get here.

"Europe is using us as a Christmas tree. With the present host of unemployed we are only adding to our labor difficulties. Unless firm and decisive legislation is enacted we are merely adding fuel to the flame of dangerous immigration."

Refuse Wage Increases

CONFRONTED by recurring demands for increase in wages from various crafts the Builders' Exchange of Sacramento has taken a firm stand against further concessions and has outlined its policy in the following resolutions, copies of which have been sent to the labor organizations:

Whereas, It appears to the members of the Sacramento Builders' Exchange that the building business has been greatly retarded by the high and unstable cost of labor, by labor trades' jurisdiction on work that rightly belongs to the laborer, and by the elimination of the helper and apprentice in some crafts employed in the course of building construction, and

Whereas, Wage increases at this time cannot be justified, in view of the fact that the cost of living is now on the decline and that the wages paid within this jurisdiction are equal to, if not higher than those paid in other parts of California;

Resolved, That the Sacramento Builders' Exchange notify the various craft organizations that they do not favor any further wage increase to labor employed in the course of building construction; and further, be it

Resolved, That the Sacramento Builders' Exchange favors the education of apprentices in the various crafts, and the use of such helpers as may be worked to advantage.

Changes in Sales Department

The J. G. Wilson Corporation, one of the oldest manufacturers of building specialties in the country, has just announced important changes in the personnel in their general sales department, as follows:

Mr. A. H. Dodge, sales manager.

Mr. E. Doscher, assistant sales manager and district manager for New York.

Mr. S. H. Monsees, general sales correspondent.

Mr. H. S. Tompkins, formerly of the Western Electric Company, to specialize on diffuselite fixtures.

Contractor's Equipment

The Smith-Booth-Usher Company, San Francisco and Los Angeles, announces arrival of stock from the Lakewood Engineering Company. The receipt of this equipment puts the company in a position to take care of the requirements of contracting and industrial workers who may have immediate need of concrete road building or construction equipment. The equipment includes building mixers, universal mixers, paving mixers, concrete road finishers, scarifiers, subgraders, gasoline locomotives, portable track, cars, batch-boxes, steel forms for roads, sidewalks, curbs and gutters, chuting equipment, concrete carts and barrows, clamshell buckets, tier-lift trucks (electric), industrial tractors (electric), trucks and trailers, and repair parts for same.

S-V-W
KOVERFLOR
TRADE MARK
A LIQUID FLOOR COVERING
For Outside and Inside Floors of Wood, Cement or Concrete
Standard Varnish Works
GENERAL OFFICE:
90 WEST STREET, NEW YORK
San Francisco Offices and Warehouse
55 STEVENSON STREET

A·F·B·A
USE FACE BRICK
— it Pays

A Bit of the Castle of Weldam, Gelderland, Holland

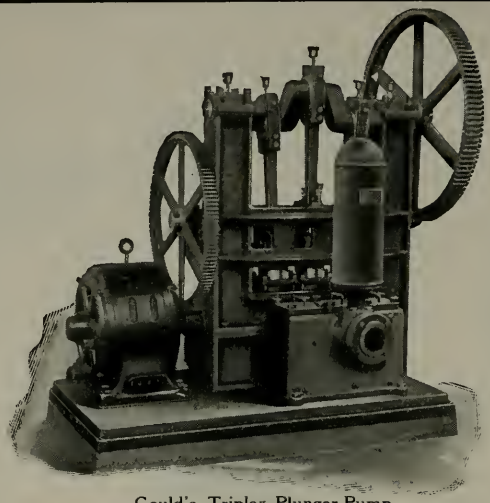
THE WIDE adaptability of brick—in expressing architectural styles, in suitability for public, industrial, commercial and domestic structures, and in meeting exacting requirements in all manner of sites—has long been established by the great variety of enduring brick monuments in all the countries of Europe.

Holland, with its peculiar requirements, early developed its abundant clay fields, and has made notable contributions to brick history. Finding in brick an economical material, the thrifty Dutch have continued through the centuries to utilize it extensively in both their public and private buildings.

In no other country today has the architect such a wide variety of face brick to draw on, as in America. It is the aim of the members of this association constantly to extend this range to assist the architect in widening the field of architectural expression, and to co-operate with the architect in solving his brick problems.

AMERICAN FACE BRICK ASSOCIATION

1159 WESTMINSTER BUILDING · CHICAGO, ILLINOIS



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Gould's Triplex Pumps

with all parts exceptionally heavy have the backbone to operate under heavy loads and to withstand the roughest treatment.

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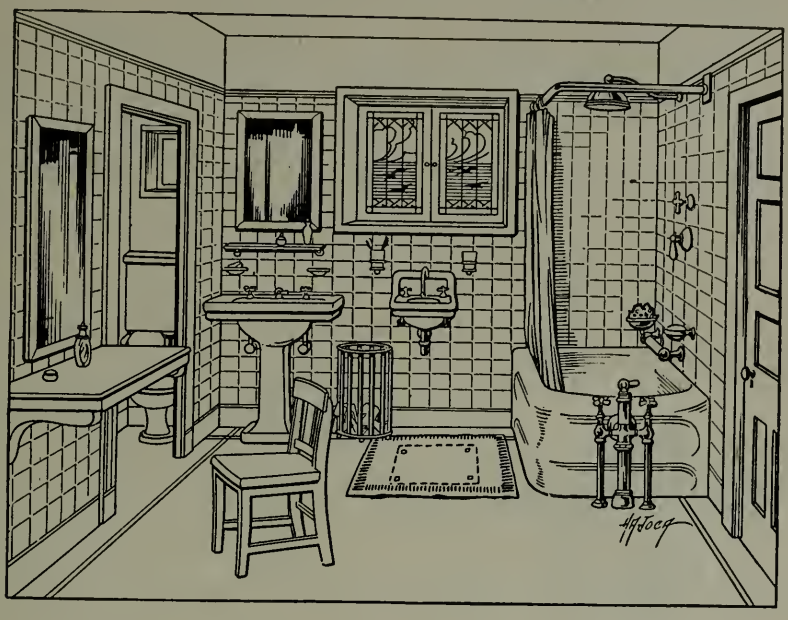

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YOU want your new bathroom equipment to be as luxurious as the investment can command; but you want the right kind of luxury.

Hajoca fixtures are luxurious not alone in point of simple, substantial, artistic designs, but they embody the luxury of sanitary service —the most vital consideration for the health of the home.

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San Francisco
California

Superintendent of Construction
Specifications and Estimates
JOHN E. HAMILTON

Present Cost of Building Materials*

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, July 20, 1921.

All prices f. o. b. cars San Francisco or Oakland. For country work add freight and cartage to prices given.

American Institute of Architects' Fees

New work—6 per cent minimum basis.
Alterations—7 to 10 per cent as a minimum basis.
High class residence work—10 per cent as a minimum.

Bond—1½% amount of contract.

Brickwork—
Common, $40.00 per 1000 laid.
Face, $100.00 per 1000 laid.
Common, f. o. b. cars, $16.50 plus cartage.
Face, f. o. b. cars, $55.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (Delivered to building in carload lots)
12x12x3 in., 15½c. per square foot.
12x12x4 in., 17½c. per square foot.
12x12x6 in., 23½c. per square foot.
Hod carriers, $7.40 per day.
Bricklayers, $9.25 per day.
Lime—$3.25 per bbl.; carload, $2.75 per bbl.

Composition Floors—30c. per sq. ft.

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.25 per yd.
No. 4 rock	2.50 per yd.
Niles pea gravel	3.25 per yd.
Niles gravel	2.50 per yd.
Niles top gravel	3.00 per yd.
City gravel	2.25 per yd.
River sand	1.50 per yd.
Bank sand	1.00 per yd.

SAND
Del Monte, $1.25 to $1.50 per ton.
Fan Shell Beach, $2.50 to $3.00 per ton.
Car lots, f. o. b. Lake Majella.
Cement (f. o. b. cars)..... $3.69 per bbl.
Rebate for sacks, 15c each.

Atlas "White"	$12.50 per bbl.
Medusa cement	$12.50 per bbl.
Forms	$25.00 per M

Wage—

Concrete workers	$7.50 per day
Cement finishers	8.35 per day
Laborers	6.95 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $8.35 per day.

Electric Wiring—$8.00 to $12.00 per outlet for conduit work (including switches).
Knob and tube average $4.50 to $6.00 per outlet.
WAGE—Electricians, $9.25 per day.

Elevators—
Prices vary according to capacity speed and type. Consult elevator companies.

Excavation—
$1.75 per yard.
Teams, $10.00 per day.
Trucks, $28.50 to $38.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 20c per square foot.
Plate, $1.40 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 44c per square foot.
Obscure glass, 28c per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $7.85 per day.

Heating—
Average, $2.00 per sq. ft. of radiation, according to conditions.
WAGE—Steamfitters, $9.25 per day.

Iron—
Cost of ornamental iron, cast iron, etc., depends on design.
WAGE—Iron workers, bridge and structural, $9.25 per day.

Lumber—(Prices delivered to bldg. site)
Common, $34 per M (average).
Com'n O. P. (select), $45 per M (average)
Flooring—

1x3 No. 1	$77.00 per 1000
1x3 No. 2	72.00 per 1000
1x4 No. 1	73.00 per 1000
1x4 No. 2	70.00 per 1000
1x4 No. 3	47.00 per 1000
1x6 No. 2 and better	73.00 per 1000
1¼x4 and 6 No. 2	75.00 per 1000
Slash grain, 1x4 No. 2	48.00 per 1000
Slash grain, 1x4 No. 3	39.00 per 1000
No. 1 common run to T. & G.	35.00 per 1000
Lath	6.50 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.00 per bdle.
No. 2	.90 per bdle.
Red Cedar	1.10 per bdle.

Hardwood Floors—
Maple floor (laid and finished), 25c per foot.
Factory grade floors (laid and finished), 20c per foot.
Oak (quartered, finished), 40c per foot.
⅝ Oak (clear), 30c per foot (plain).
⅝ Oak (select), 28c per foot (plain).
⅝ Oak, quartered, sawed, clear, 35c.
WAGE—Floor layers, $9.35 per day.

Hardwood Floors (not laid)—

		Per M ft.
5/16x2" sq. edge	Clear quartered oak	$173.50
	Select quartered oak	121.50
	Clear plain oak	119 00
	Select plain oak	95.00
13/16x2¼" face	Clear quartered oak	210.00
	Select quartered oak	144.00
	Clear plain oak	157.50
	Select plain oak	114.00
	Clear maple	134.50
	Clear maple—white	178.00

Hardwood Floors (not laid)—*Continued*

			Per M ft.
13/16x3¼"	face	Clear maple	$134.50
1⅛x2¼"	face	Clear maple	134.50
⅜x2"	face	Clear quartered oak	158.00
		Select quartered oak	112.50
		Clear plain oak	112.50
		Select plain oak	78.00
		Clear maple	89.50

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box frame windows (average) with trim, $7.50 and up each.
Doors, including trim (single panel), $10 and up each.
Doors, including trim (five panel) ..... $9.00 each
Screen doors, $3.50 each.
Window screens, $1.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $9 each.
Dining room cases, if not too elaborate, $10 each.

Labor—Rough carpentry, warehouse heavy framing, $13.00 per 1000.
For smaller work, average, $25.00 to $35.00 per 1000.
WAGE—Carpenters, $8.35 per day.
Laborers—Common, $6.00 per day.

Marble—(Not set) add 60c up per ft. for setting

Columbia	$2.05 sq. ft.
Alaska	2.05 sq. ft.
San Saba	3.65 sq. ft.
Tennessee	2.50 sq. ft.
Verde Antique	4.55 sq. ft.

WAGE—Marble polishers and finishers, $6.00 per day.

Painting—
Two-coat work, 35c per yard.
Three-coat work, 50c per yard.
Whitewashing, 5c per yard.
Cold water painting, 9c per yard.
Turpentine, $1.05 per gal. in cases and 90c per gal. in tanks.
Raw Linseed oil, 94c per gal in barrels.
Boiled Linseed oil, 96c per gal in bbls.
Pioneer white and red lead, 11¾c lb. in one ton purchases; 12½c lb. for less than 500 lbs.
WAGE—Painters, $8.35 per day.
NOTE—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—$8.00 each.

Plastering—
Interior, on wood lath, 70c per yard.
Interior, on metal lath, $1.30 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White. $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $6.50 at yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.25 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. warehouse, $3.25 per bbl.
Hardwall plaster, $22.00 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
WAGE—Plasterers, $10.20 per day.
Lathers, $9.25 per day.
Hod carriers, $8.35 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.25 per day.

Reinforcing Steel—
Base price for less than car load lots, $3.00 per 100 lbs.
Carload lots, $2.75 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

Roofing—
Five-ply tar and gravel, $6.50 per square for 30 squares or over.
Less than 30 squares, $7.00 per square.
Tile, $35.00 to $50.00 per square.
Redwood shingle, $10.00 per sq. in place.
Cedar shingle, $10.00 per square in place.
Reinforced Pabco roofing, $8.25 per square. WAGE—Roofers, $8.35 per day.

Rough Hardware—
Nails, per keg, $5.50 base.
Deafening felt, $110.00 per ton.
Building paper, P. & B.,
1 ply, $3.50 per 1000 ft. roll.
2 ply, $5.50 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.25 per hank 100 ft.
Common, $1.00 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Sheet Metal—
Windows—Metal, $2.00 a square foot.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 40c a square foot (not glazed).
WAGE—Sheet metal workers, $9.25 per day.

Stone-Granite—
WAGE—Stone cutters, $8.35 per day.
Stone setters, $8.35 and $8.80 per day.

Store Fronts—
Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.
Zouri bar, $1.25 per lin. foot.
Zouri Underwriters' Specification sash, $1.60 per lin. foot.

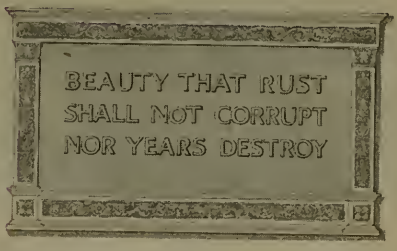
Structural Steel—$130.00 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

Steel Sash—
Fenestra, from S. F. stock, 28c to 34c per sq. ft.
Fenestra, plant shipment, 28c to 34c per sq. ft. (Includes mullions and hardware.)
Trus-con, from San Francisco stock, 27c to 33c per sq. ft.
Trus-con, plant shipment, 27c to 33c per sq. ft.
U. S. Metal Products Co., 30c per sq. ft. in San Francisco.

Tile—White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. foot, laid.
WAGE—Tilesetters, $8.35 per day.

Detail of Carnegie Library, San Francisco, with Armco Ingot Iron window grill.

ARMCO
INGOT IRON



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Maximum display is the important factor in store front window construction. Whether you are planning a store with a frontage of 25 feet or 225 feet, window installation will do much to make or mar the success of the tenant.

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BROWN was a moderately thriving architect and engineer, and it meant a great deal to him to have a shy at the big Hatfield & Cummins project.

While the development work he had handled stood very much to his credit, still he had never been connected with any construction of sufficient importance to bring his name into real prominence.

Naturally there was a great commotion when the phone rang and Hatfield's voice came over the wire:

"Mr. Brown, we have to go ahead on the extension of our new installation at once. Bring over a contract form by noon, guaranteeing your telephone estimate of November 8th and we will sign with you.

Brown clapped down the receiver. He was a made man!

The Hatfield & Cummins patronage meant connections and prestige that would convert him into a formidable competitor for all sorts of big propositions.

But in five minutes he had lost ten years of his optimism. The estimate was not to be found. He remembered perfectly having carefully put it away where he could readily find it—although the thought of having a swing at the big job had never really grazed him.

It was too late to refigure the estimate—it must be found. In a mad scramble, Brown and his office helpers went pawing over everything in the office—but no result. Brown hasn't found that estimate yet although he gave up looking for it long ago.

His concern was not converted into prominence overnight. In the absence of an efficient filing system they had lost out in the big opportunity of years.

But Brown did not have to stub his toe twice to find out the trouble. He came into H. S. Crocker Company and told his story.

"Gentlemen," he said, "what can you do for me that will prevent a thing of that kind ever happening in my business again?

He was shown the possibilities of the Globe-Wernicke Filing Cabinet for his particular office and requirements. He learned how he could have saved a large order for his business, and how in the future he would always be able to put his finger on any piece of correspondence or office data he chose no matter when it might be needed.

Needless to say, Brown's office has been reorganized for future protection and efficiency.

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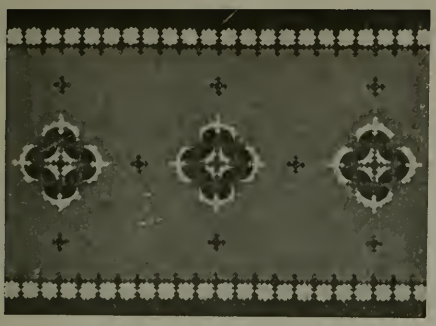

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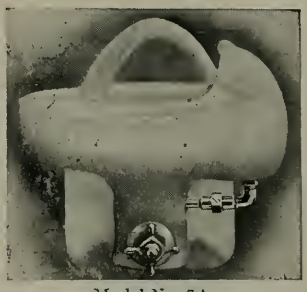

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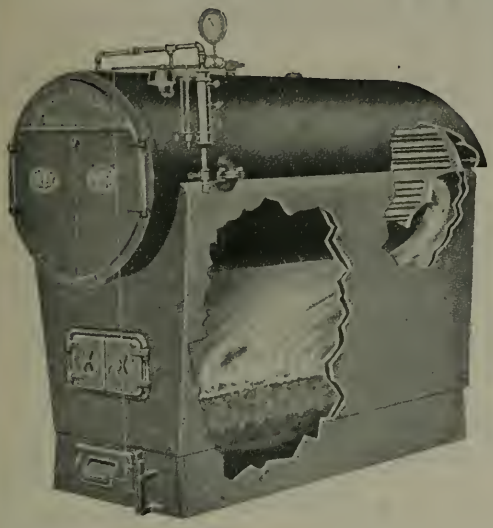

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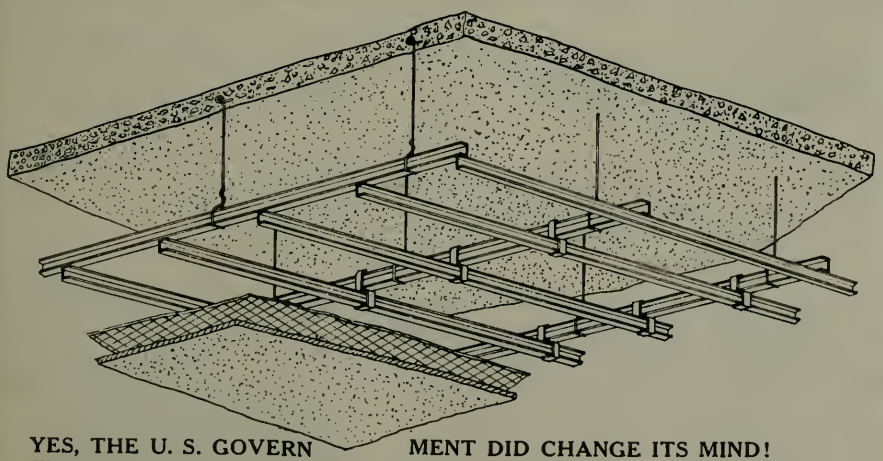

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Made for 1 inch carrying bar and ¾ inch lathing bar and ¾ inch carrying bar and ¾ inch lathing bar. Can be used for wall furring as well as for ceiling work.

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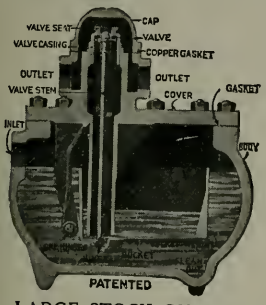

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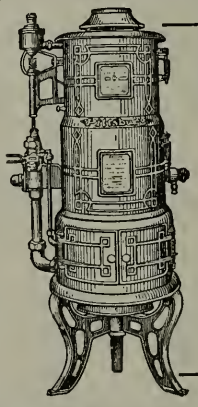

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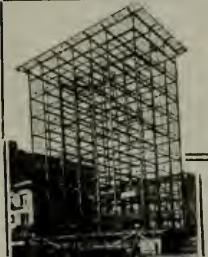

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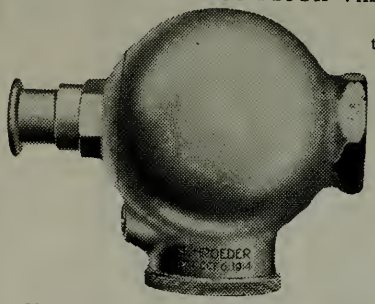

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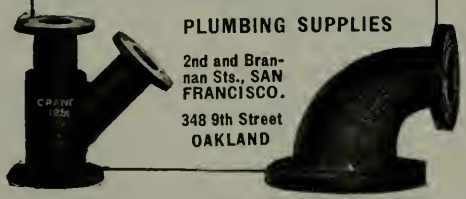

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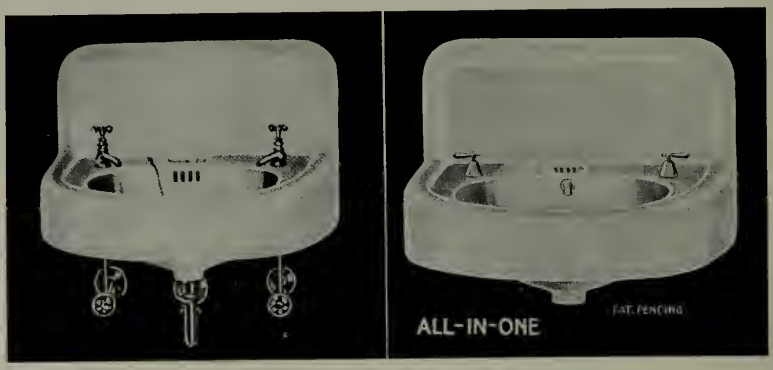

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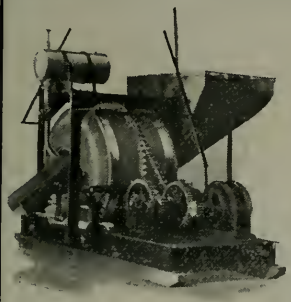

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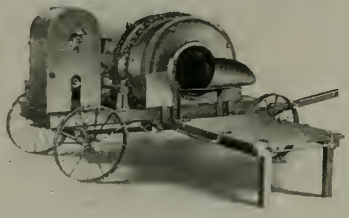

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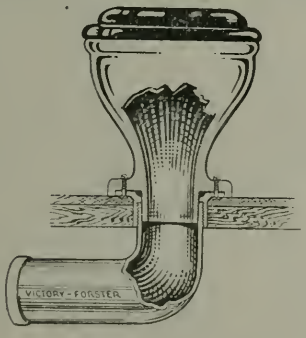

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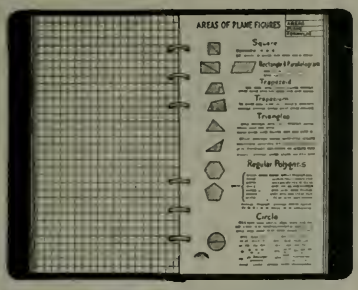

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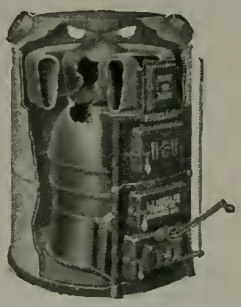

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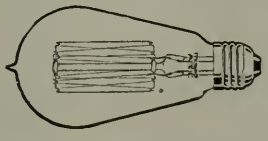

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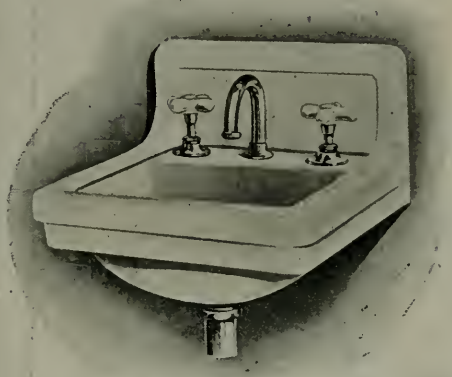

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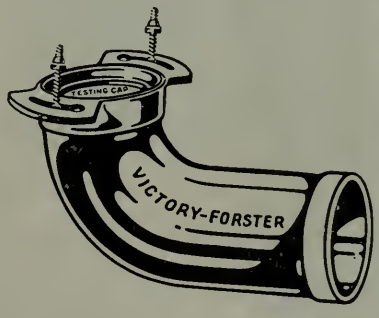

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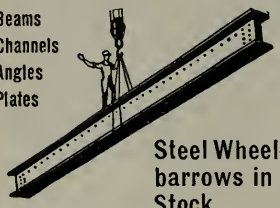

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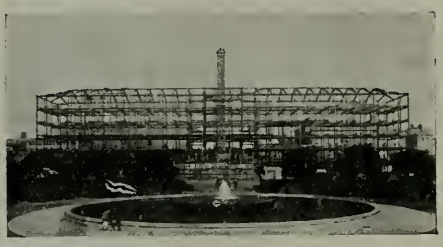

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIALS, SUPPLIES, ETC.
- Abeel-Jensen Co., Call Bldg., San Francisco.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.
- Johns-Manville Company, Post and Mason Sts., San Francisco.

CABINET MAKERS
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.
- Pacific Mfg. Co., San Francisco, Los Angeles and Oakland.
- Frank Portman, 1618 Mission St., San Francisco.

CARPETS
- John Breuner Co., 281 Geary St., San Francisco.
- D. N. & E. Walter, Mission near Second street, San Francisco.

CASEMENT WINDOW HARDWARE
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
- Victory Manufacturing Co., Monadnock building, San Francisco.

CEMENT
- Atlas Portland Cement Co., all principal cities.
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass. James Hambley & Son, Distributors, San Francisco and Los Angeles.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Cement coating, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
- Cannon & Co., Sacramento, Cal.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Tropico Potteries, Inc., Glendale, Cal.
- United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
- Pacific Electric Clock Co., 516 Wells-Fargo Bldg., San Francisco.
- Standard Electric Time Co., 461 Market St., San Francisco.

COLD STORAGE PLANTS
- H. W. Johns-Manville Co., Post and Mason Sts., San Francisco.
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- I. M. Sommer, 401 Balboa Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE HARDENER
- Gunn, Carle & Co., Inc., 444 Market street, San Francisco.

CONCRETE MIXERS
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Smith-Booth-Usher Co., San Francisco and Los Angeles.

CONCRETE REINFORCEMENT
- Edw. L. Soule Co., Rialto bldg., San Francisco.
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric. L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Triangle Mesh Fabric. Sales agents. Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.
- Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
- Garnett Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- R. W. Littlefield, 357 12th St., Oakland.
- Unit Construction Co., Phelan Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL—Continued
John M. Bartlett, 357 Twelfth St., Oakland.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
Herbert Beckwith, 323 Newton Ave., Oakland.
Collman & Speidel, 546 Monadnock Bldg., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 180 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran, R., Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Del Favero & Rasori, 180 Jessie St., San Francisco.
S. S. Jackson, 351 12th St., Oakland.
Jas. L. McLaughlin, 251 Kearny street, San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Gunn, Carle & Co., Inc., 444 First street, San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.
Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Waterhouse-Wilcox Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Oregon.
Stanley Works, New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Drinking Faucet Co., 1808 Harmon St. Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom street, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
Central Electric Company, 185 Stevenson street, San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
H. S. Tittle, 766 Folsom St., San Francisco.
Spencer Electric Co., 355 12th street, Oakland.
Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Garnett Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Western Electric Safety Mfg. Co., Inc., 247 Minna street, San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom street, San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

ESTIMATOR—BUILDING AND ENGINEERING WORKS
Arthur Priddle, 185 Stevenson street, San Francisco.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FENCES—WIRE
Standard Fence Construction Co., 245 Market St., San Francisco, and 310 12th St., Oakland.

KEWANEE GARBAGE BURNERS AND BOILERS

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St.. San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE BRICK
- Livermore Fire Brick Works, 604 Mission street, San Francisco.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.

FIRE INSURANCE
- Bankers & Shippers Insurance Co., Insurance Exchange Bldg., San Francisco.

FIRE PROOFING
- American Insulex Company, Berkeley Bank Bldg., Berkeley.

FIRE-PROOF DOORS
- Forderer Cornice Works, 269 Potrero avenue, San Francisco.
- U. S. Metal Products Co., 330 10th street, San Francisco.
- Fire Protection Products Co., 3117 20th street, San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Independent Automatic Sprinkler Co., 712 Hearst Building, San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—DUST PROOF CEMENT
- L. Sonneborn Co., United Materials Co., San Francisco agents.

FLOORS—HARDWOOD
- Oak Flooring Manufacturers' Association of the United States, Ashland Block, Chicago, Ill.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Hardwood Company, 511 First street, Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FLUSH VALVES
- National Valve Company, 23-25 Minna St., San Francisco.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., Coast Sale offices, San Francisco, Los Angeles and Seattle, Wash
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES AND INCINERATORS
- Kerner Incinerator Co., 77 O'Farrell St., San Francisco.
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission st., San Francisco.
Cobbledick-Kibbe Glass Co., 175 Jessie St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT
Ellery Arms Co., 583 Market St., San Francisco.
A. G. Spalding & Bros., 625 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Dieckmann Hardwood Lumber Co., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Hardwood Company, First street, near Broadway, Oakland.

HEATERS—AUTOMATIC, GAS, ELECTRIC
Electric Sales Service Co., mfrs. of Therm-elect Water Heater, West Berkeley.
"Humphrey Radiantfire," The General Gas Light Co., 768 Mission St., San Francisco.
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING CONTRACTOR'S, EQUIPMENT, ETC.
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon streets, San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
C. A. Dunham Co., Sheldon Building, San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Moline Heat, Hobart Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
O. M. Simmons Co., 115 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; office in Chronicle Bldg., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

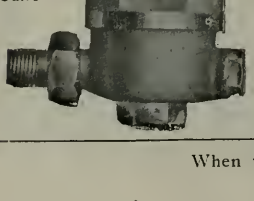
INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant streets, San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Johns-Manville Co., all principal coast cities.
L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

INCINERATORS
Kerner Incinerator Co., 77 O'Farrell St., San Francisco.

INTERIOR DECORATORS
Atherly Bros., 2032 Polk St., San Francisco.
Martin & Frederick, 1374 Sutter St., San Francisco.
John Breuner Co., 281 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
Taylor Galleries, 1635 Broadway, Oakland and San Francisco.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INTERIOR DECORATORS—Continued
The Tormey Co., 1042 Larkin St., San Francisco.
A. Quandt & Son, 374 Guerrero street, San Francisco.

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Thomas Day Company, Mission, near Third street, San Francisco.
Roberts Mfg. Co., 663 Mission St., San Francisco.
Perfeclite Manufacturing Co., Seattle, Wash.; San Francisco Representatives, Myers & Schwartz, 75 New Montgomery street, San Francisco; 1119 S. Los Angeles street, Los Angeles.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco

LUMBER
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California street, San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco. Portland and Tacoma.
Tompkins-Kiel Marble Company. 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.

METAL DOORS AND WINDOWS
Fire Protection Products Co., 3117 20th St., San Francisco.
Waterbouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

METAL FURNITURE
Forderer Cornice Works, 269 Potrero avenue, San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.
Frank Portman, 1619-20 Mission St., San Francisco.
Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.

OFFICE EQUIPMENT
C. F. Weber Co. 985 Market St., San Francisco.
Rucker-Fuller Co., 677 Mission St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

OIL BURNERS
Bunting Iron Works, 1215 First Nat. Bank bldg., San Francisco.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.
W. S. Ray Manufacturing Co., 29 Spear street, San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

KNITTLE-CASHEL CO., Inc.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Federal Ornamental Iron Works, San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San cisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
Atherly Bros., 2032 Polk St., San Francisco.
Wayne & Williams, 1914 Fillmore St., San Francisco.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.
A. Quandt & Son. 374 Guerrero street, San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.
Palace Hardware Co., 581 Market St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PIPE FITTINGS
Victory Manufacturing Co., Monadnock building, San Francisco.

PLAYGROUND APPARATUS
A. G. Spalding & Bros., 625 Market St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis street, San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
All-In-One Company, Ochsner bldg., Sacramento.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
National Valve Company, 23-25 Minna St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Metals Mfg. Co., 1300 N. Main st., Los Angeles.
Victory Mfg. Co., 423 Monadnock Bldg., San Francisco.
West Coast Porcelain Manufacturers, Rialto building, San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California street, San Francisco.

POWER PLANTS
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PRELIMINARY ESTIMATES AND VALUATIONS
Arthur Priddle, 185 Stevenson street, San Francisco.

PUBLIC QUANTITY SURVEY PLAN
Arthur Priddle, 185 Stevenson street, San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
California Hydraulic Engineering & Supply Co., 70 Fremont St., San Francisco.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

QUANTITY SURVEYOR FOR CONTRACTORS
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C. A. Dunham Co., Sheldon Bldg., San Francisco.

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Edward L. Soule, Rialto Building, San Francisco.
Gunn, Carle & Co., Inc., 444 Market street, San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Truscon Steel Co., 527 10th St., San Francisco.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, 765 Mission street.

ROOFING CONTRACTORS
Bender Roofing Company, Monadnock Bldg., San Francisco.

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United Materials Co., Crossley Bldg., San Francisco.

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SAN FRANCISCO, 177 Stevenson Street
OAKLAND, 1001 Franklin Street
LOS ANGELES, 908 Washington Building
SAN JOSE, 16 North First Street

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFES AND LOCKS
Hermann Safe Company, 216 Fremont street, San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Forderer Cornice Works, 269 Potrero ave., San Francisco.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SHINGLES—STONE
McClenahan Products Co., Inc., 112 Kearny St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

STATIONERY AND SUPPLIES
Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.
H. S. Crocker Co., 565 Market street, San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Western Pipe and Steel Co., 444 Market street, San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Moore Shipbuilding Company, Oakland.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Union Construction Co., 604 Mission street, San Francisco, and Key Route Fell, Oakland.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL ROLLING DOORS
Pacific Building Materials Co., Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles. Waterhouse-Wilcox Co., San Francisco.
Rolph, Mills & Co., San Francisco, Los Angeles, Portland and Seattle.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.
Truscon Steel Company, 527 Tenth street, San Francisco.

STORE FRONTS
The Kawneer Manufacturing Company, West Berkeley, California.
Zouri Safety Sash Bars—Cobbledick-Kibbe Glass Company, 175 Jessie St., San Francisco.

STUDDING—FIREPROOF STEEL
Steel Studding Company, 1216 Folsom St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.
Western Electric Safety Switch Co., Inc., 247 Minna street, San Francisco.

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Rucker-Fuller Desk Co., 677 Mission street, San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Sharon Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.

VALVES—PIPES AND FITTINGS
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
National Valve Company, 23-25 Minna St., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Co., 115 Mission St., San Francisco.
H. Mueller Mfg. Co., 635 Mission street, San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco
Shroeder Direct Flush Valves, mfrd. by Standard Metals Mfg. Co., 1300 N. Main street, Los Angeles.
Victory Manufacturing Co., Monadnock building, San Francisco.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.
Everlasting Blow-off Valves. General Machinery and Supply Co., 39 Stevenson street, San Francisco.

VARNISHES
Bass-Hueter Paint Company, Mission, near 4th street, San Francisco, and all principal coast cities.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS. AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, Rialto Building, San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Gunn, Carle & Co., Inc., "Hydrate," 444 Market street, San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.
Baird-Bailhache Co., 478 Sutter street, San Francisco.

WATER CLOSET CONNECTIONS
Victory Manufacturing Co., Monadnock building, San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SASH CORD
Sampson Spot Cord, John T. Rowntree, Pacific Coast agents, San Francisco and Los Angeles.

WINDOW SHADES
National Window Shade Co., Inc., 244 Eddy Street, San Francisco.

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Hauser Window Co., 157 Minna St., San Francisco.
The Kawneer Company, West Berkeley, California. (Simplex Fixtures.)
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WIRE FENCE
Standard Fence Co., 245 Market street, San Francisco; and 310 12th street, Oakland.

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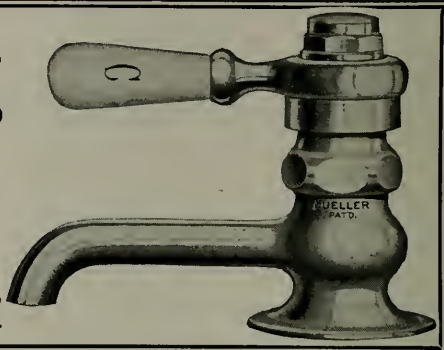

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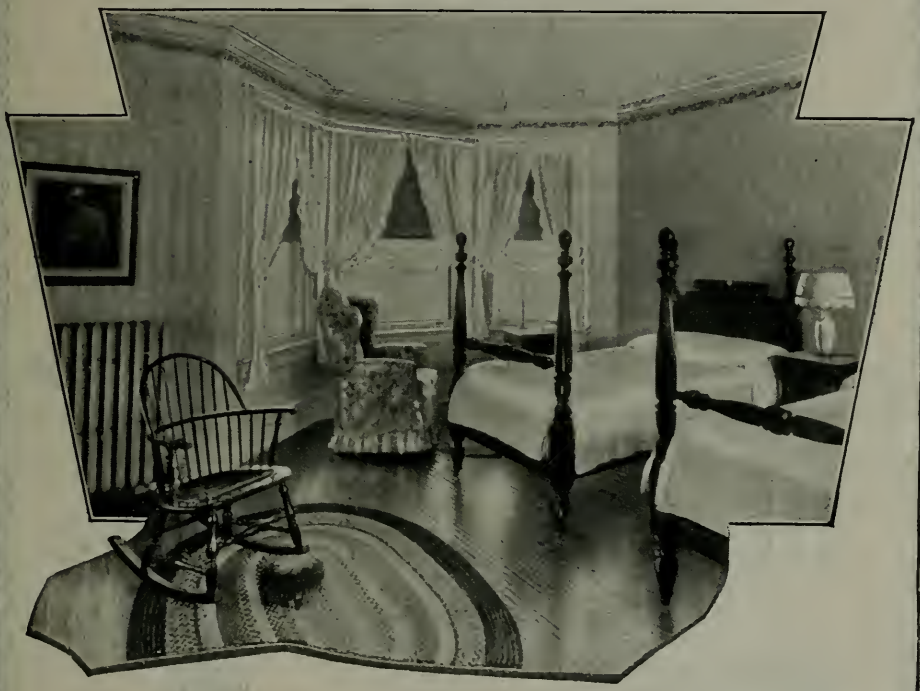

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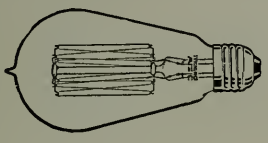

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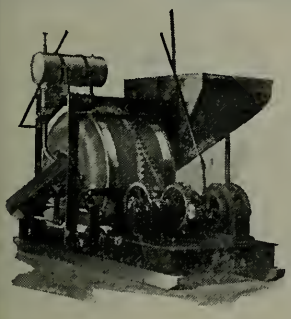

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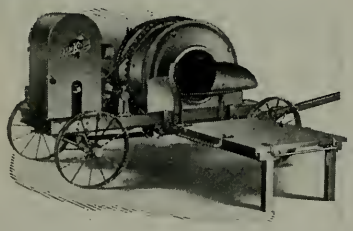

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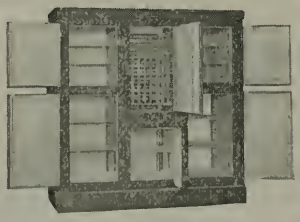

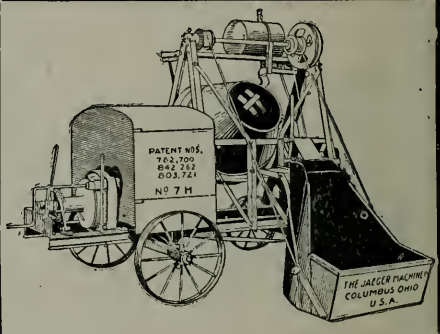

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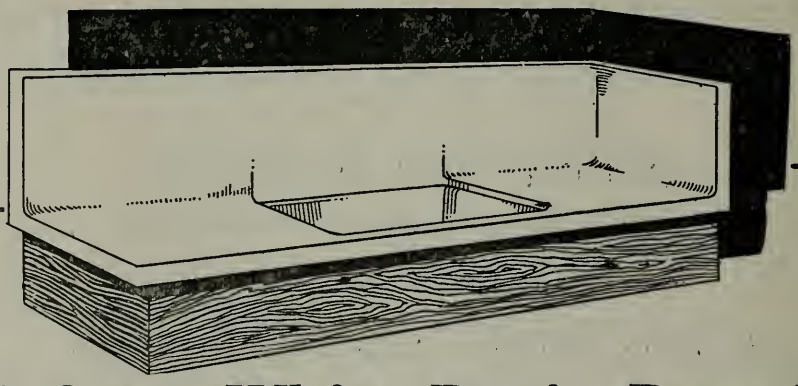

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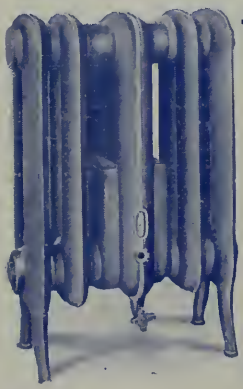

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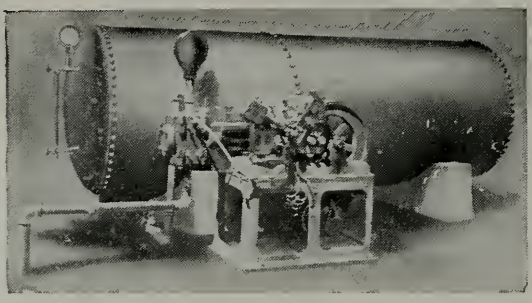

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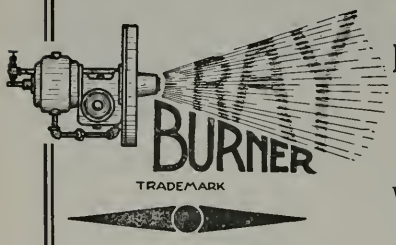

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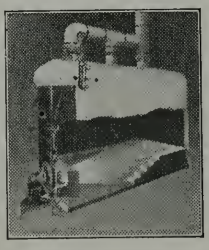

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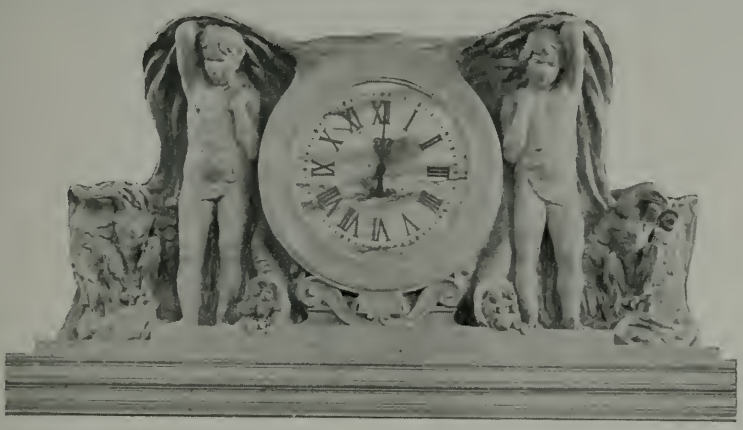

THE ARCHITECT AND ENGINEER

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SANTA BARBARA, CAL. MYRON HUNT, ARCHITECT

THE
ARCHITECT
AND
ENGINEER

AUGUST
1921

Vol. LXVI
No. 2

A Step Toward A Californian Architecture

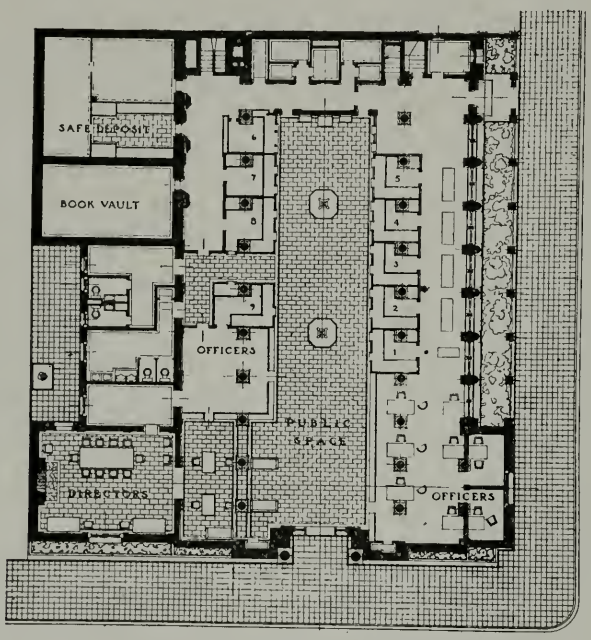
By IRVING F. MORROW

EVERY now and then one encounters a building which prompts, almost as its first reaction, the surprised inquiry, "How did he put it over?" Of course "putting it over" is a study in itself. From the architectural point of view several factors are involved, but the determining consideration is the psychology of client and architect, which is not specifically an architectural matter at all. There are architects who enjoy long and successful careers unactuated by any impulse to put anything over; and there are clients to whom the idea is instinctively so repugnant that under no circumstances can they be induced to entertain it. On the other hand, there not infrequently occurs the coincidence of a client and an architect both so inbued with the desire for individuality that the resulting maneuvres are to all intents devoid of that sense of virtuosity implied in "putting it over." But generally speaking the feat is accomplished only at the price of considerable manipulation; and whenever we witness a building which successfully departs in any essential manner from the "safe and sane" prescriptions of precedent, we are prone to credit the architect with exceptional diplomatic as well as architectural ability.

Possibly the directors of the County National Bank and Trust Company of Santa Barbara chose Mr. Hunt to design their new building precisely because of a desire for something out of the ordinary and above the commonplace; in which event a due share of the credit is rightly theirs. But in any case our instant reaction, anticipating any opportunity for reflection and judgment, is that Mr. Hunt has "put something over." We can see the typical business man smudging his finger over clean and careful drawings with the objection that he never saw a bank like that before (practical people never seem to appreciate that this circumstance may not be significant); and if he happens to be of an observing turn, he will continue that it looks like a church (forgetting the intimate rela-

tion, despite one anciently recorded set-back, which has always existed between the money-changers and the temple); he will also probably add, as a final damning indictment, that it looks like a small town bank (nothing so disconcerts the person of provincial instincts as the fear of being thought provincial). All of which points toward either exceptional tact in Mr. Hunt, or exceptional intelligence in his clients; or, as I should be inclined to infer from the internal evidence, both.

The field of Mr. Hunt's innovation is, properly speaking, financial rather than architectural. Hitherto in this country it has been deemed indecorous, or at least inexpedient, to handle money in any appreciable quantity in a milieu deficient in cornices, balustrades, modillions, dentils, eggs and darts, coffers, consoles, and all the other appurtenances of the magnificent Roman tradition. These elements and details are custom-



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Myron Hunt, Architect

arily present in direct proportion to the magnitude of the financial interests involved, and any shortcoming on this score has been recognized as derogatory to financial prestige; just as, for example, in polite society attendance at the performance of an opera unadorned by the approved sartorial proprieties and concomitant haberdashery would certainly conduce to a forfeiture of social prestige. The relations between certain building problems and the architectural vocabulary commonly employed in giving them expression offer material for an independent aesthetic study. Without going into details as to origin or justification, it will suffice to note here that visible roofs, groined vaults, wood ceilings, and small scale paneling, have been universally recognized as appertaining to the ecclesiastical rather than to the financial tradition. In fact, Mr. Hunt's building is quite definitely in the ecclesiastical line of descent (which is a different thing from saying that it looks like a church). From

the specifically architectural point of view it is not original except in the freshness of outlook. This, after all, is possibly the essential fact of originality, and if an artist have this, all the other attributes of originality which are worth while shall be added unto him. The building derives directly from the best Renaissance tradition of the church architecture of the Mediterranean countries. It realizes the spirit to which the Mission Padres obviously aspired, and which they might have achieved with more competent architectural training and more adequate means of execution. Yet in spite of these and similar suggestions, which inevitably arise, it does not look like a church. This, on reflection, is one of the most surprising facts concerned—that a building which, in conception and in the formal elements of expression, derives obviously from traditional religious sources, should proclaim itself in the end an urbane, refined, albeit business-like, provincial financial institution. Such a feat implies a sureness

COUNTY NATIONAL BANK AND TRUST COMPANY, SANTA BARBARA, CAL.
Myron Hunt, Architect

of touch and deftness in expression which are uncommon. Ordinary talents, fearing that delicacy and justness of emphasis will fail to "get over," are betrayed into exaggeration and agitation and loss of poise in general (witness the average "film star"). For this reason the ordinary Western provincial bank aspires to look (financially) like the Bank of England.

Quantitatively considered, the architecture of the typical contemporary bank is measured in square feet (or possibly one should say in square yards, since plasterers commonly estimate in this unit); but it is impossible to consider Mr. Hunt's building otherwise than in terms of volume. There is a concreteness to the structural scheme, and (if I might so add without the charge of paradox) to the spaces which it encloses that banishes the conception of surface. It is particularly noteworthy that the interiors are not mere appropriations of so much of out-of-doors; the

air volumes possess definiteness and reality of their own, independently, as it were, of the walls and ceilings which bound them. This is, in substance, only a more analytic recognition of the exceptional felicity and distinction of the proportions or inter-relations of length, breadth and height. I believe that the ability to produce such effects is one of the surest tests of a realistic and creative architectural imagination. The attainment of results of this nature is quite beyond the scope of drawings,

DIRECTORS' ROOM, COUNTY NATIONAL BANK AND TRUST COMPANY, SANTA BARBARA, CAL.
Myron Hunt, Architect

however exhaustively studied. It demands a capacity for clear visualization, which is what imagination properly signifies.

Evidence abounds as to such a clear pre-conception, or imagination. The general scheme is of the most obvious, but incidental variations of great charm preclude any vulgar obtrusiveness. In fact, the subtlety, the delicacy, in the distribution of emphasis throughout is admirable. This is essentially what is intended in speaking of taste. It is a tribute peculiarly gracious to refined sensibilities, for it not only implies discriminating perception on the part of the designer, but presupposes in the spec-

tator a similarly sensitive appreciation. From this point of view the building seems impeccable. From the larger architectural organization down to the movable furniture there is no apparent lapse from taste and consistency. It is an uncommonly perfect thing, free from that frigidity or aloofness which is popularly associated with a high degree of formal perfection.

I have already referred the building to the same sources which inspired the Mission Fathers, and characterized it as a more fully and per-

COUNTY NATIONAL BANK AND TRUST COMPANY, SANTA BARBARA, CAL.
Myron Hunt, Architect

fectly developed expression of the ostensible end of their efforts. There is in the physical aspect of the California scene a natural disposition to welcome just such forms of architectural expression as are provided by its earliest historical associations—a happy coincidence which is animating the evolution of a recognizably Californian attitude in architecture. We have come to regard Mr. Hunt as one of the ablest exponents and movers of this developing tradition; and it seems as if buildings like the one under discussion must one day be among those looked back upon as the precedents.

NOTES

The following notes in regard to the building for the County National Bank and Trust Company at Santa Barbara have been furnished by Mr. Hunt's office:

"This building was designed by the firm of Myron Hunt, architect. The construction was in charge of Winsor Soule, architect, of Santa Barbara, as supervising architect. Special furniture was designed in part by the architect and in part by George W. Reynolds of Los Angeles, interior

COUNTY NATIONAL BANK AND TRUST COMPANY,
SANTA BARBARA, CAL.
Myron Hunt, Architect

decorator. The draperies, which are incomplete in the photographs, were designed and furnished by Mr. Reynolds. The bank fixtures, counters and screens, were designed by the architect.

"One of the primary requirements in planning this bank was a sun-lighted interior without skylights. The diffusion of light as provided by the plastered vaults of the side aisles has worked out very successfully.

"A second requirement was that the effect of planting be somehow provided. When the shrubbery and flowers in the Carrillo Street garden or

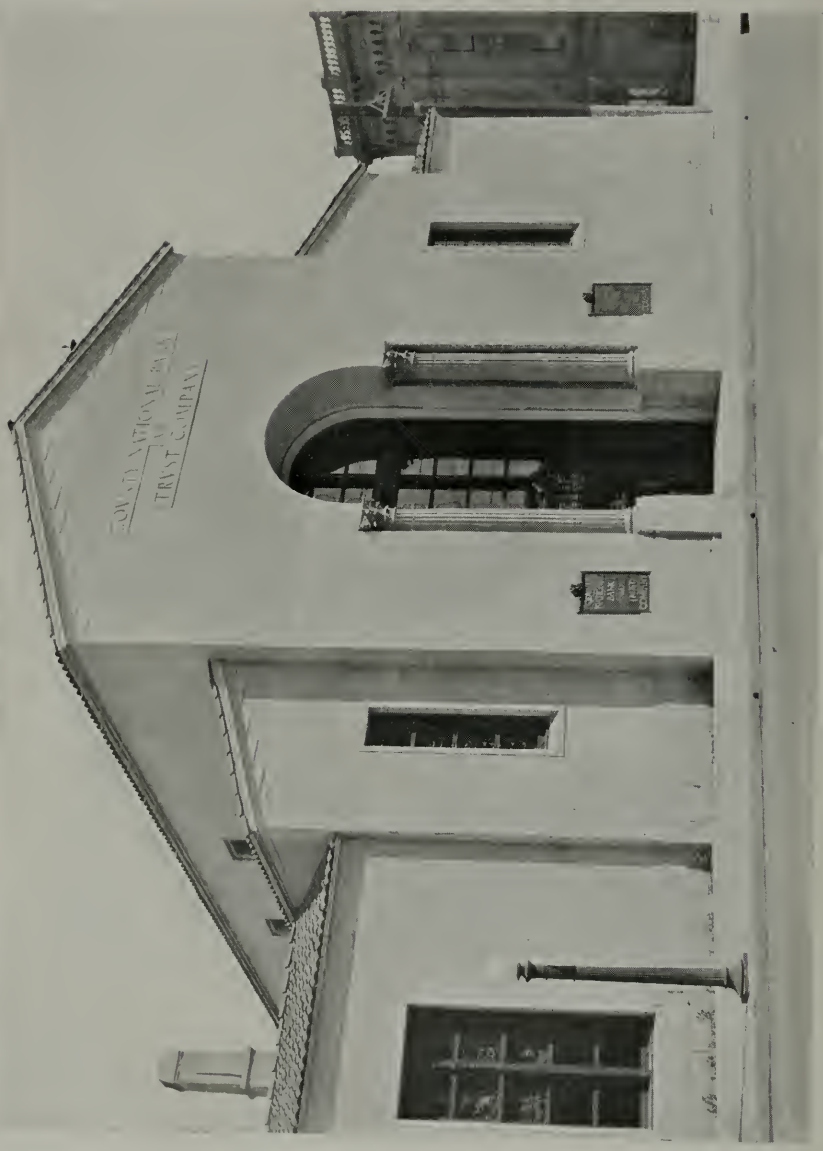
planting space grow up past the south windows of the bank, as they will do very rapidly in Santa Barbara, this object will be achieved.

"The floor of the main banking room is Napoleon gray, marble base black and gold. The woodwork of the counters and the furniture is oak, stained to a very dark weathered appearance with a dull rubbed surface. The cage grilles are wrought iron. The walls and columns of the interior are a warm colored plaster with considerable texture to the surface. The high ceiling of the central portion of the banking room, which is thirty-six feet above

COUNTY NATIONAL BANK AND TRUST COMPANY,
SANTA BARBARA, CAL.
Myron Hunt, Architect

the floor, is California redwood, stained a warm brown tone. The same is true of the ceiling of the directors' room. Lighting fixtures are wrought iron with wrought brass leaves and ornaments.

"The exterior of the bank is plastered, very similar to the interior, but heavier in tone, with terra cotta trimmings. The terra cotta was furnished by Gladding McBean, of San Francisco. Parker Brick Company of Santa Barbara were the general contractors. Mr. Sam Hunter of Santa Barbara was the carpentry contractor, and was also contractor for the interior finish of the bank."



COUNTY NATIONAL BANK AND TRUST COMPANY,
SANTA BARBARA, CAL. MYRON HUNT, ARCHITECT

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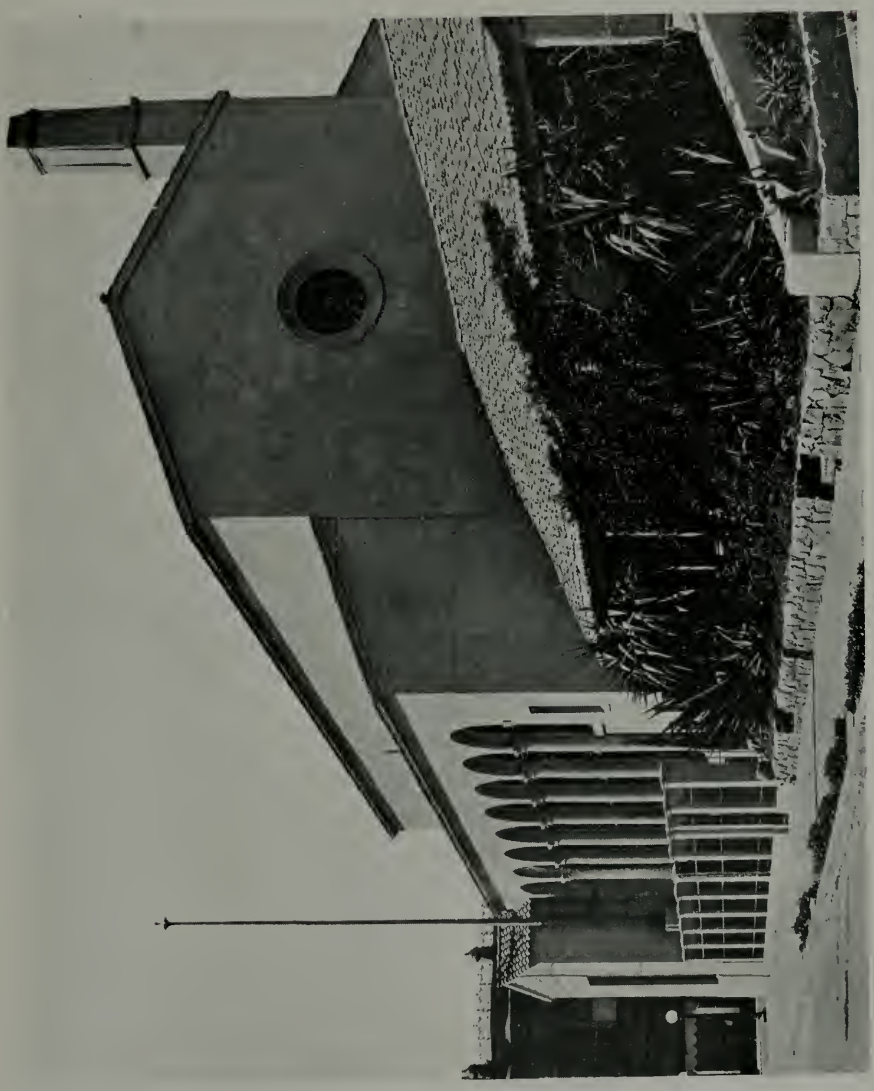

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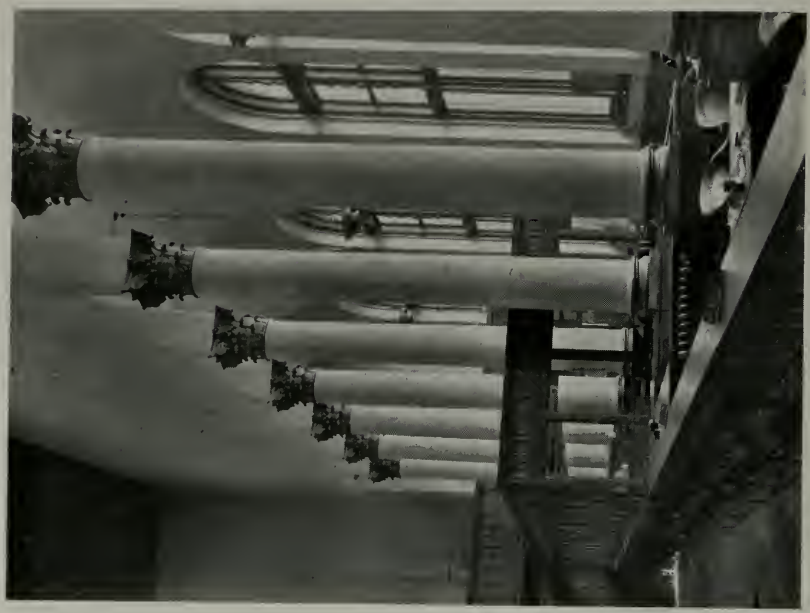
SANTA BARBARA, CAL. MYRON HUNT, ARCHITECT



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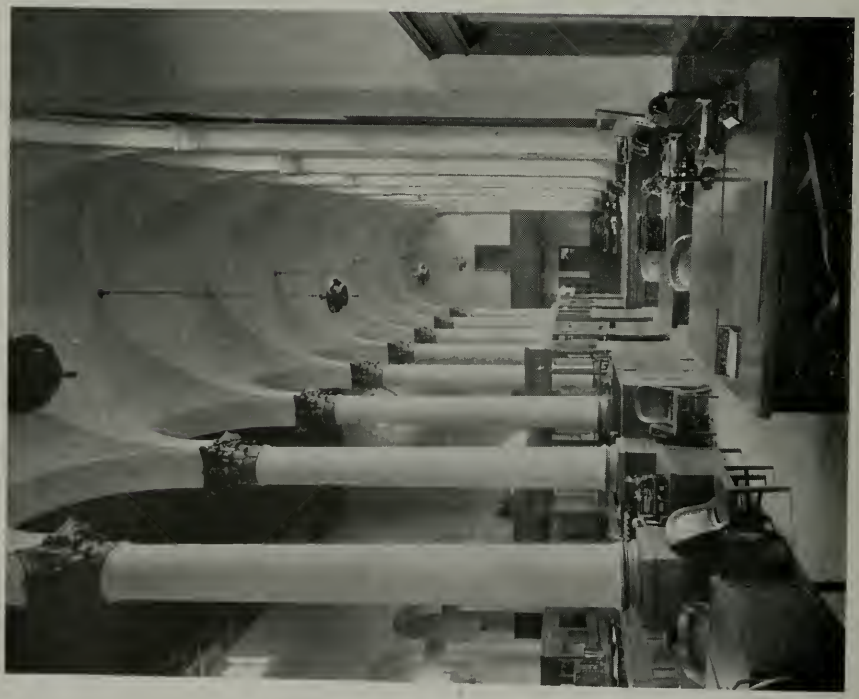
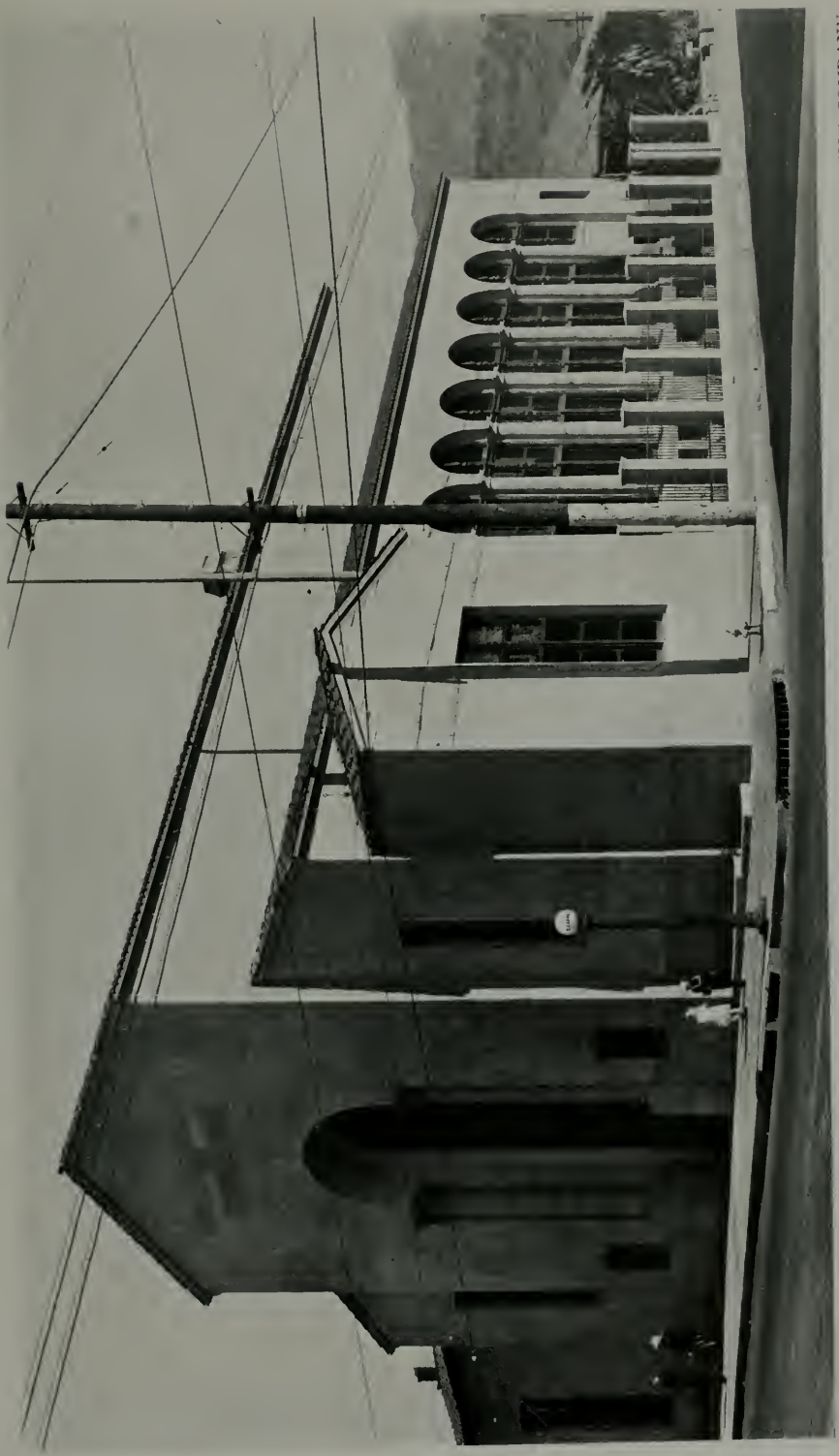
SANTA BARBARA, CAL. MYRON HUNT, ARCHITECT





COUNTY NATIONAL BANK AND TRUST COMPANY, SANTA BARBARA, CAL. MYRON HUNT, ARCHITECT

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COUNTY NATIONAL BANK AND TRUST COMPANY,
SANTA BARBARA, CAL. MYRON HUNT, ARCHITECT

IN AN AUVERGNE VILLAGE. DRAWN BY W. R. YELLAND

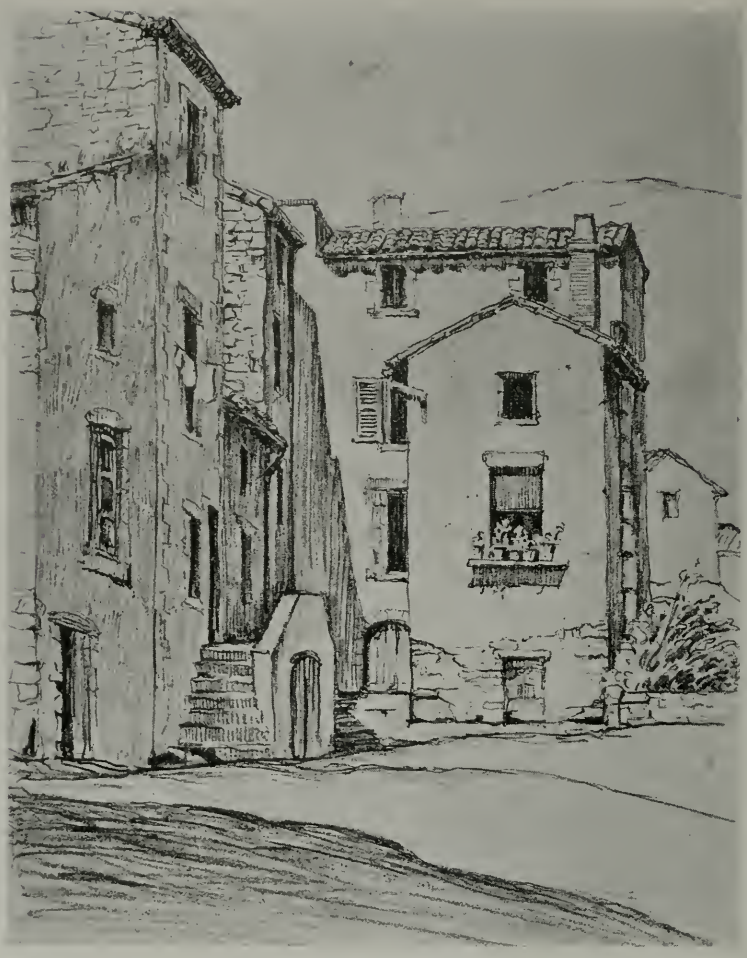
The Auvergne Village

By W. R. YELLAND, Architect

RECENTLY I traveled down through some villages in the Auvergne mountains of France. This is a trip I would like to recommend to my fellow architect traveling in France, because of the quaint atmosphere of the place. It is a district seldom visited by American travelers. It is probably ten hours ride south of Paris and six hours west of Lyon, and is therefore somewhat off the main line of travel.

The Auvergne section of particular interest rises from the valley near Clermont-Ferrand to a range made conspicuous by a dome-shaped crest, 4,800 feet in elevation. This dome is known as Puy-de-Dome.

The Auvergne mountains from the earliest of times were favorites with the people. The country is fertile and protected. The Gauls inhabited this region until their able leader Vercingetrix was driven out by the Romans. The ruins of an old temple destroyed at this time may still be seen on the summit of Puy-de-Dome.



IN AN AUVERGNE VILLAGE. DRAWN BY W. R. YELLAND

Coming down the mountain side toward Clermont-Ferrand is a popular spring. This place is known as Royat. The people in olden times were attracted to this place, through the healing qualities of the water, just as they are at the present time. The most interesting section of the Auvergne is the country in the immediate neighborhood of the spring. Walk out for a few kilometers in any direction, and you will pass many strange little villages scattered through the ravines and valleys of the mountains.

The villages of Romangat and Beaumont are especially interesting. I am sure that the mode of life and the way of doing things have not changed much in the last 200 years. The buildings of these towns are very irregular in plan and shape. They are generally constructed to fit a winding roadway on one side and a couple of crooked walls on adjoining property. The work is made with walls and courtyards and terraces so as to care for all the needs of the peasant, his family, his stock, his

IN AN AUVERGNE VILLAGE. DRAWN BY W. R. YELLAND

pig, his poultry. All are pretty much under one roof. For some reason the peasant has decided to fit most of his rooms at different floor levels from the ground, thus avoiding straight and rigid lines in the exterior openings. Many outside stairs, too, are to be seen, and these add to the charm of these strange buildings.

Covered and open bridges are not infrequent between buildings. When the bridges are open they are decorated with flower pots; or, perhaps more characteristic, a string of wash. Often the way into the courtyard is through an arched opening under the house.

The buildings and walls are constructed of irregular stone and plastered over. The plaster in many cases has long ago fallen from the stone, leaving contrast of color and texture.

The little streets—some scarcely more than six feet wide—that wind up and down and about the villages are paved with stone. They are for the most part without sidewalks, and are pitched to the center. Here

IN AN AUVERGNE VILLAGE. DRAWN BY W. R. YELLAND

runs the rain-water, as well as the kitchen wash-water. Perhaps it is not sanitary—yet our little village would not be quite right without it. Even the ancient manure pile up against the house wall is a necessity to the character and primitiveness of our village.

At intervals in the village where as a rule several streets come together we find an old stone watering trough. The trough may be rectangular, round, or octagonal in shape. A stone water pipe rises vertically at the center, from which several streams of water are continually flowing into the trough. Just above the surface of the water are iron racks to hold the housewife's jug or urn when she comes to get water for domestic purposes.

Can you picture what a scene is always to be found in such a place? A few oxen standing near the watering place; a few ducks; a few chickens; and perhaps a stray pig some yards further down from the trough enjoying the little mud that is made from a leak or an overflow of the

IN AN AUVERGNE VILLAGE. DRAWN BY W. R. YELLAND

trough. A peasant woman dressed in her all black dress with white apron and white cap can always be seen coming or going with her waterjug.

Another watering place fully as useful is the village laundry. The laundry is nothing more or less than a big stone-paved basin about ten to twenty feet square. It is built, as a rule, level with the ground. The stone is beveled off at an angle of about 45 degrees into the water. In and out of this tank, or big wash tub, water is continually flowing. Quite often a little brook is turned through this basin. The women of the village do all their washing here. The wash is brought from the house by wheel barrows and placed near the basin. Then the woman kneels down and bends over the slanting stone edge of the basin. This is her washboard. Here she pounds and works at her clothes. She is not alone in her work. The entire basin may be surrounded by village women. I have often thought, as I passed these places, that perhaps wash-day was one of the most interesting days of the week; for always there is a

ARCHED DOORWAY TO A COURTYARD. DRAWN BY W. R. YELLAND.

lively bit of conversation going on over the community wash-tub as these people work.

The human life on the streets was always of great interest. There was the farmer with his oxen returning with a load of hay from a field near the village. There were little children driving the milk cows. There was the old leathery-faced woman returning from her day's work bearing a basket of garden stuff on her head. Down the street, sitting on the door step, would be an old grandmother knitting, and by her side a child holding a baby, or perhaps learning her first lesson in needle work.

Everywhere there is a strange atmosphere of simplicity and contentment. I am inclined to feel that, partly anyway, the happy, informal way of building has affected their lives.

However you tramp out through the Auvergne when next you visit France, take your sketch pad. In spite of the flies and odors you will enjoy the place. As you sit and sketch, a spirit of something will come over you that will stay with you. It will make you feel for something new—something different when next you lay out a home for your client in your own home country.

A BRIDGE OVER A STREET. DRAWN BY W. R. YELLAND.

Copyright by Fred H. Kiser

MT. HOOD, NEAR PORTLAND. The city, county and state are now co-operating in building a loop boulevard entirely around this mountain and its glaciers

Traffic Congestion Forcing More Carefully Prepared Street and Boulevard System Plans

Portland, Oregon, Latest City to Complete a Comprehensive Plan for Permanently Handling Traffic

By CHARLES H. CHENEY,
City Planner and Consultant to the Portland City Planning Commission

SO suddenly has the age of the motor vehicle come upon us and so critical has the resultant traffic congestion become all over the world, that constructive steps to solve traffic problems are of interest to all cities. While temporary regulations, one-way traffic and other makeshift measures are being tried out, no permanent solutions have been found to compare with the linking up of a few wide, direct, conveniently located thoroughfares connecting all parts of the city.

Traffic congestion is forcing more thorough and careful study of street conditions, both as to what we have now and as to what we must anticipate in the near future. St. Louis in 1917 completed a Major Traffic Street Plan, in following which millions of dollars are now being spent for widenings and openings, because they will pay. Detroit, Chicago and many smaller cities have their problems well in hand.

The Major Traffic Street and Boulevard System Plan recently adopted by the City Planning Commission of Portland, Oregon, after two years of study, is expected to do much for that city.* The problems met are typical of most of the cities of the country, and therefore of general interest.

Reasons for a Major Traffic Street Plan.

It is more and more evident that in the future through travel should be limited to a few conveniently located traffic streets, on which ordinary drivers once in the stream of travel can know that they are safe, and move steadily ahead, and on which reckless ones can be more easily and economically regulated.

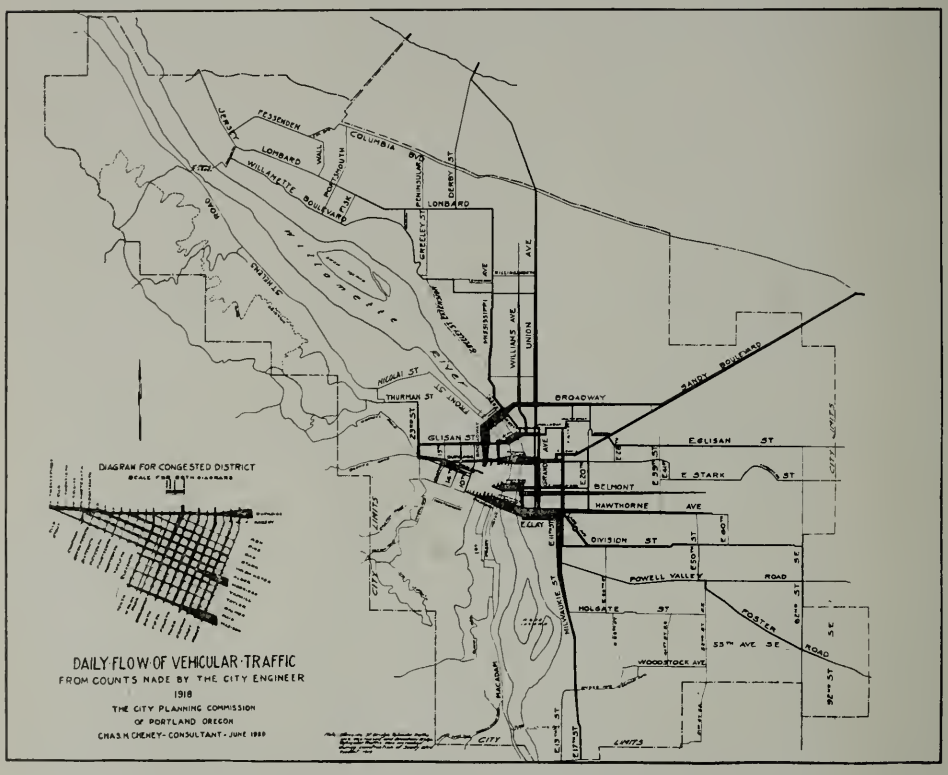
Commercial vehicles and hauling should be limited to a few definitely established Major Traffic Streets until they have reached the nearest point to their destination. Only thus can we furnish enough heavy traffic pavements to satisfy traffic needs, or pay the bills for their making and upkeep.

Approval of the City Planning Commission is required by state law in Portland, as in many other cities of the country, on all maps of new land sub-divisions, both within the city limits or for six miles outside. In passing on the twenty-six such maps submitted to it during the past eighteen months, the Portland Commission found that it must have a general plan of Major Traffic Streets, or through leads, for its guidance. The Major Street Plan just adopted is comprehensive and will serve to convince owners of new tracts as to the necessity of a few wide and continuous through streets laid out in advance.

*Note—Illustrations and figures quoted here are from the comprehensive "Major Traffic Street Plan, Boulevard and Park System for Portland, Oregon" report, recently issued by the Portland City Planning Commission.

The wear and tear is so great, the danger to children and pedestrians so serious, and the cost of permanent wide traffic pavements and their upkeep so large, that cities can afford to have only about every sixth or eighth street established and paved as a traffic street.

The greatest number of street accidents today are caused by reckless turning in or crossing at side streets. Once a comprehensive system of Major Traffic Streets is settled on all cars can be required to come to a dead stop before turning from a minor or side street into an established traffic street. Chicago already has such a system partially in effect. The Police Traffic Bureau and City Planning Commission recommend it for Portland.



THIS SHOWS THE USE OF STREETS BY AUTOMOBILES AND OTHER VEHICLES IN PORTLAND, OREGON

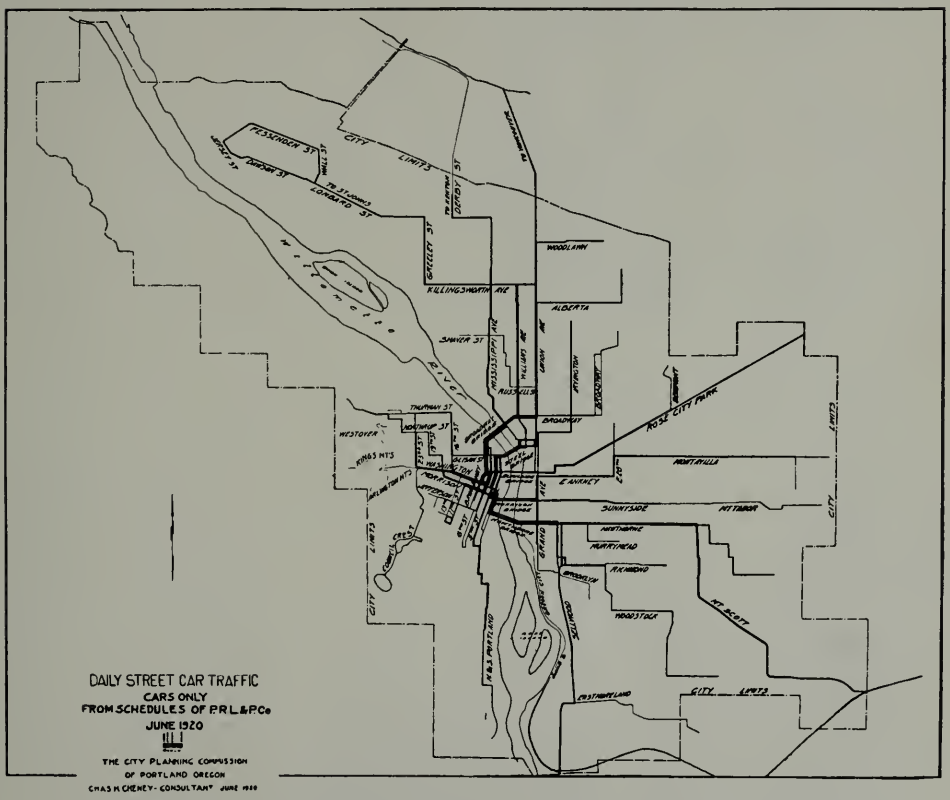
Streets Should Be Arranged to Suit Their Use.

During the past fifteen years the coming of the fast motor vehicle with trailers carrying heavy loads amounting sometimes to as much as ten or twelve tons on two wheels, has made necessary more permanent and heavy hard surface pavement, and more direct through routes. These form the Major Traffic Streets.

The balance, or minor residence streets, comprise 85 per cent or more of our total system in most cities. For these minor streets Portland has adopted a minimum roadway between curbs of twenty feet, thereby making a saving of $112 a lot in paving cost, and it is expected these narrow roadways will be safer, quieter, less attractive to speeders, and yet take care of all the traffic which originates or ordinarily has business on them.

The Portland commission found that millions of dollars of needless and overwide paving has been put down on such streets in the past, and estimates that several hundred thousand dollars, at least, will be saved taxpayers in the next five years, on new paving, by settling now which streets will not be needed for through traffic and wide pavements.

With a complete system of traffic streets decided upon, minor streets can be closed in industrial zones without question, wherever so desired for business reasons. Fewer cross streets in residence districts would reduce the cost of land, by eliminating the land lost in such streets, and their paving costs. Portland has 200 foot square blocks in a large part of the city, and the closing of alternate minor cross streets is recommended.



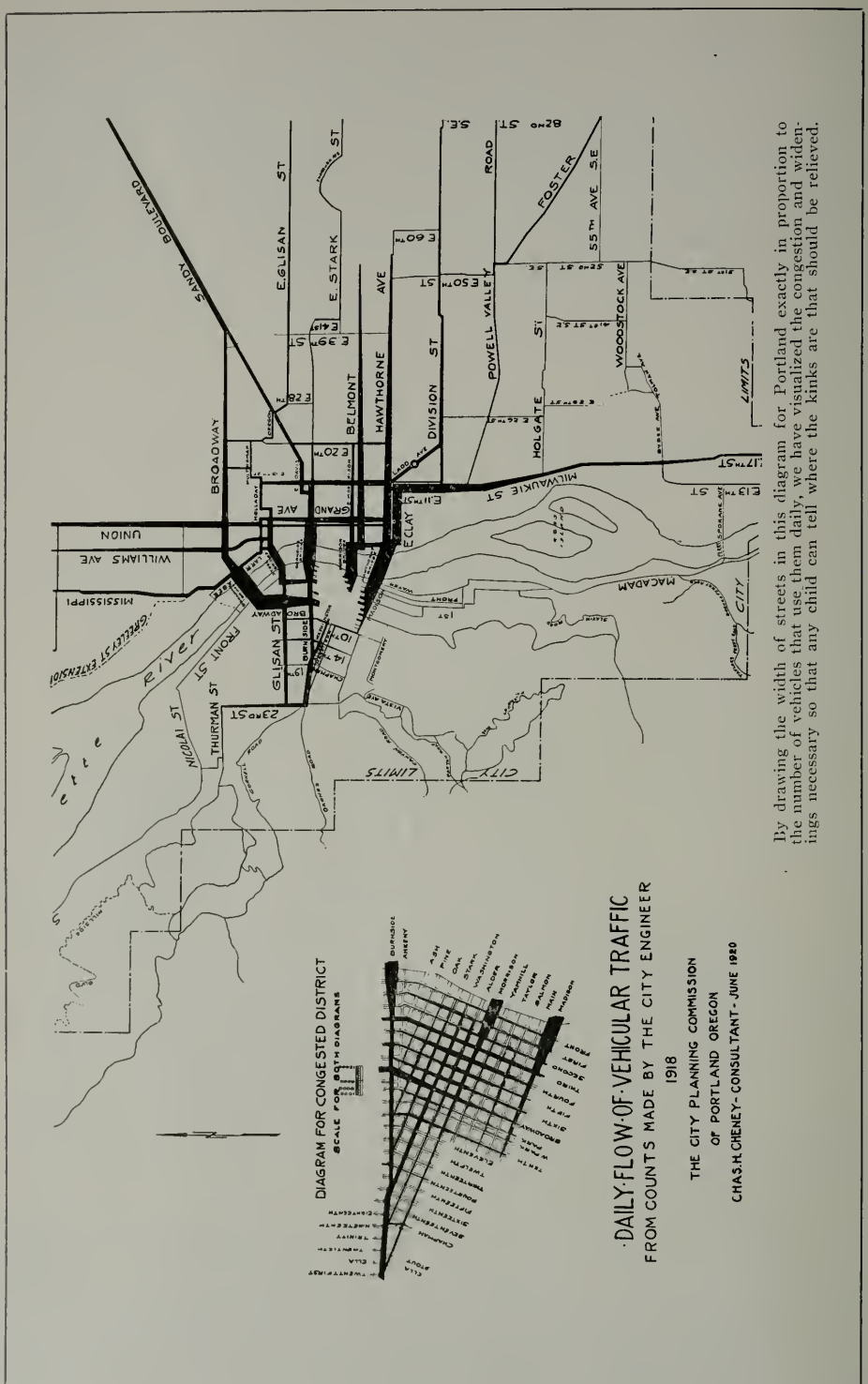
THIS SHOWS THE USE OF STREETS BY STREET CARS IN PORTLAND AND THE PROPORTIONAL STREET TRAFFIC CONGESTION THEY CAUSE

Home ownership was found to be discouraged and possibly seriously deterred by the unnecessary burden of overwide street paving on minor streets in the past.

What a Careful Traffic Census Shows.

Graphic illustration of the congestion points, irregularities and traffic difficulties of Portland are shown by the diagrams of flow of vehicular traffic, street car traffic and downtown pedestrian traffic, made from traffic counts for typical days kept by the City Engineer's Office. From these charts and other data collected, the following facts stand out:

1. Motor vehicles have come into use in much larger numbers than the horse-drawn vehicles they supplanted, requiring wider and heavier pavements.


DAILY FLOW OF VEHICULAR TRAFFIC
FROM COUNTS MADE BY THE CITY ENGINEER
1918
THE CITY PLANNING COMMISSION
OF PORTLAND OREGON
CHAS. H. CHENEY - CONSULTANT - JUNE 1920
DIAGRAM FOR CONGESTED DISTRICT
SCALE FOR BOTH DIAGRAMS
By drawing the width of streets in this diagram for Portland exactly in proportion to the number of vehicles that use them daily, we have visualized the congestion and widenings necessary so that any child can tell where the kinks are that should be relieved.

2. Where there were but 2493 motor vehicles registered in Oregon in 1910 there are 103,650 in 1920 (one-third in Portland). Twice as many may be expected in five years.

3. Street accidents in Portland have increased from 2244 in 1917, to 8379 reported in 1920, and over 1000 for the month of January, 1921. Twenty-five persons killed and 1121 injured was the 1920 toll for this city of 260,000 population. Other cities of the country are in proportion. One hundred dollars average damage in each accident might be a conservative estimate of property loss.

4. Vehicular traffic across the five bridges increased nearly four times in seven years, from 11,902 daily in 1913, to 46,282 in 1920. This explains the traffic congestion downtown, which has grown in proportion.

5. Pedestrian traffic on the five bridges meanwhile decreased from 28,389 in 1913 to 20,514 in 1920.

6. The diagram of vehicular traffic shows a few streets leading to the bridges which do the greatest work, and therefore need to be widest and have the heaviest pavements. Greatest congestion appears at the bridge approaches, which are most in need of relief by enlargement and separation of grade crossings.

7. Certain bridges do not carry their fair proportion of the traffic seeking the center of the city and new diagonal street approaches should be arranged for them so that they may do their share.

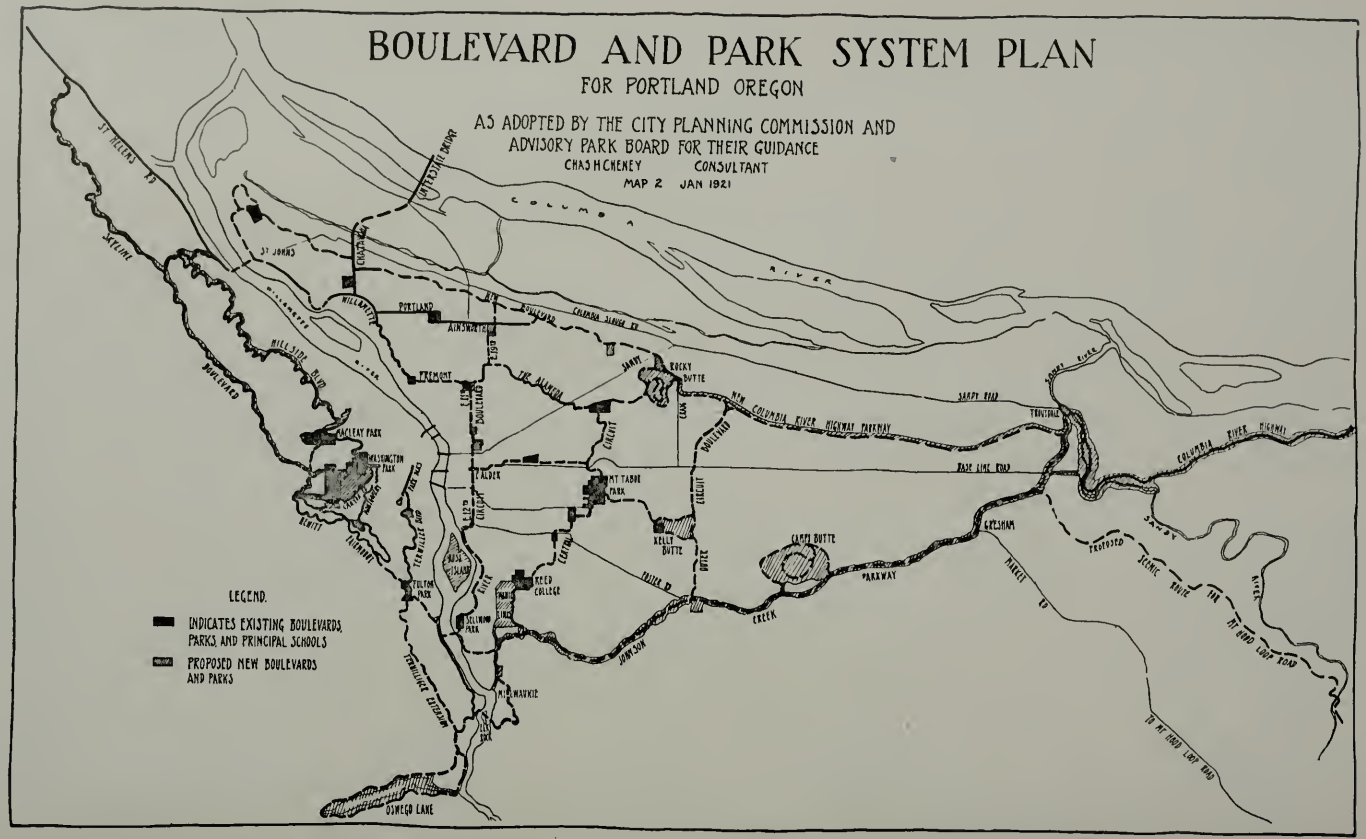
Traffic Delays Are Costly.

"The problem of transportation within cities is one of rapidly increasing importance, yet one which has attracted very little attention," says Mr. J. P. Newell, consulting engineer and former president of the City Planning Commission, in an introduction to the Portland report. "Much thought has been given to the transportation of goods, but I refer to the movements of the people themselves. Probably 125,000 people move a distance of a mile or more and back again in Portland each day. Save one minute each way for each person and you have 250,000 minutes worth at least $2000 or 6 per cent on $10,000,000. Does anyone ever make such a trip without at least one minute's unnecessary delay?

"We are apt to overlook the fact that the probability of a delay is almost as bad as the certainty, in wasting time if one must get to work or keep an important engagement; he must allow for probable delays just as though they were sure to happen. A city is a great workshop, and ease and freedom of movement of its people, are as important even from a financial standpoint as to the workmen in the factory. Delays increase according to the square or the cube or the nth power of the population."

Certain fundamental considerations, to be taken into account in the preparation of a Major Traffic Street Plan, include ultimate railroad terminal and belt line service, re-location of rapid transit lines to finally do away with grade crossings, elevation of bridge approaches over the railroads and waterfront hauling streets, the establishment of probable future bridge locations, waterfront improvements, etc. The report on unification of railroad lines presented to the National Conference on City Planning of 1920 at Cincinnati was used as a basis for studying these items in the plan, Mr. Newell and the writer having been members of the committee presenting that report.

The Portland report includes a program for rebuilding two large existing bridges across the Willamette and for adding four new ones at the intervals when it is estimated they will be needed, between 1922 and 1940.



SHOWING THE CONTINUOUS LOOPS OR DRIVES OF THE NEW COMPREHENSIVE SYSTEM FOR PORTLAND, SIMILAR TO THE KANSAS CITY AND CHICAGO BOULEVARD SYSTEMS.

Three Kinds of Streets Found Necessary.

For economy, safety and convenience it is necessary to divide all streets into three general classes, according to their use.

1. *Major Traffic Streets and Thoroughfares* should be located to give direct access by shortest route, carry unlimited traffic and be unobstructed as far as possible by street car lines or railroad grade crossings. They should be not less than eighty feet in total width both within the city and leading out into the country for an average of six miles. In Portland some eight principal thoroughfares of 100 feet in width are recommended, and waterfront hauling streets of 120 feet.

2. *Boulevards and Parkways* should be indirect in route so as purposely to avoid being later appropriated as traffic routes, and should exclude commercial vehicles and truck hauling. Direct routes should only be adopted when closely paralleled by a Major Traffic Street.

It is a well understood practice, in cities having developed boulevard systems, that all boulevards should be not less than 150 feet wide and preferably 200 feet wide. This width is necessary to secure ample permanent parking strips for double or triple lines of trees on each side of the main roadway. Such parking and planting are what make a boulevard desirable, refreshing and useful, as distinct from ordinary or traffic streets.

"It is an abuse of language to call a street of ordinary width a boulevard. A street one hundred feet wide would be a street or avenue of handsome width, but a mean boulevard. As residenct streets commonly have two rows of trees, a boulevard should have at least four rows, and should be wide enough to accommodate them properly. A width of 150 feet would generally be a minimum for a boulevard.

"In the case of boulevards and parkways, the houses should be set back twenty-five feet or more from the sidewalk, and suitable legal methods for securing this should always be adopted at the time of laying out a boulevard parkway."*

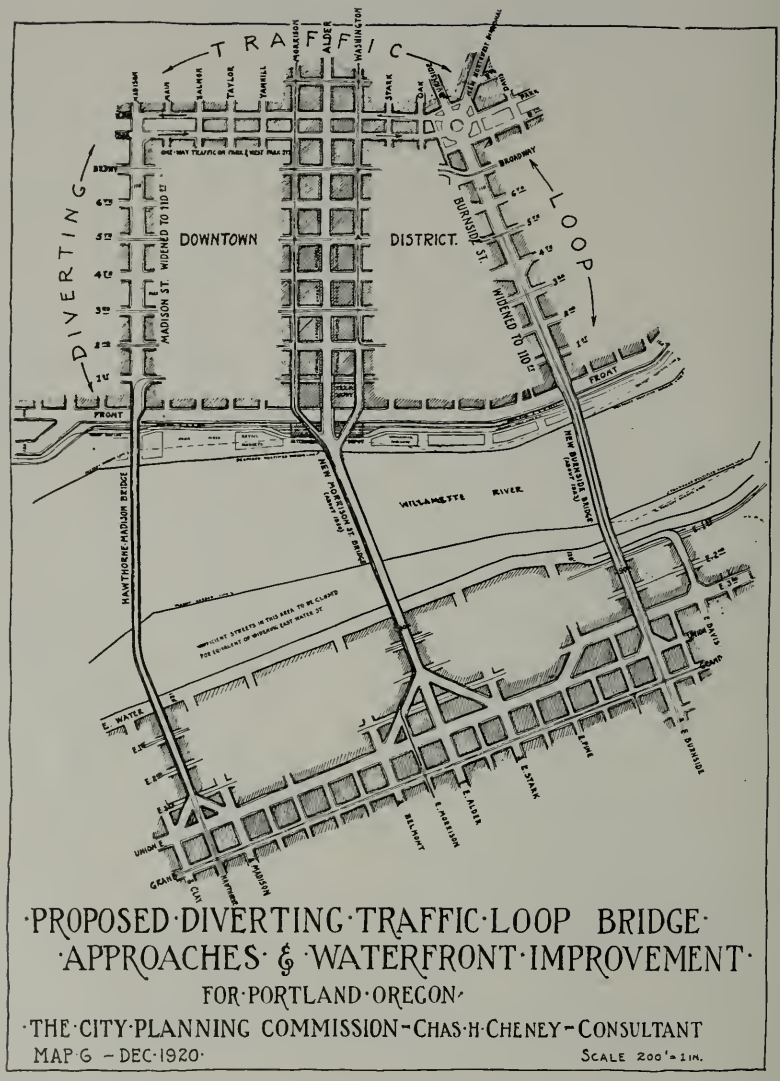
The Boulevard System Plan should be carefully checked on the ground and provide a complete system for ultimately encircling the city with several loops linking up with existing boulevards, to show off to advantage the finest public buildings, parks and scenery the city has to offer, on routes that will be the most economical to acquire and build.

Business should be prohibited by zone ordinance on all roal boulevards of the permanent Boulevard System.

3. *Minor Residence Streets,* which comprise about 85 per cent of the total in the city, should be protected from the intrusion of needless traffic, to preserve the safety, quiet and comfort of people living on them. Forty and fifty foot streets should be accepted where building set back lines are permanently established by the city in the future. They should be paved with 20 foot roadways or less, except where there are street car lines.

Like most cities, Portland is already compactly built up down-town, and for a considerable distance out from the main center. Changes in streets, in these portions of the city at least, would be expensive and can only be undertaken where relief from present or future congestion makes them imperative. In the Major Traffic Street and Boulevard System plans adopted, every widening, extension or new street proposed has been carefully weighed by the City Planning Commission, as to its practical purpose and value, and only such proposals included as seem justified in cost for relief of traffic congestion.

*Olmsted Bros. in report on Spokane Boulevard and Park System.



It is proposed to widen Alder street (now 60 ft.) by shifting the sidewalks under the buildings and arcading the ground floors to leave 15 ft. in the clear. This will give an ultimate 56 ft. roadway for east and west automobile traffic through the center of the retail district, something that is at present much needed in Portland. It would serve also as a good anchor to traffic and thereby help to stabilize downtown business and office building investments.

PROPOSED NEW BURNSIDE STREET BRIDGE, PORTLAND, AS DESIGNED BY C. B. McCULLOUGH, BRIDGE ENGINEER OF THE OREGON STATE HIGHWAY COMMISSION, FROM DATA FURNISHED BY COUNTY COMMISSIONERS AND CITY PLANNING COMMISSION

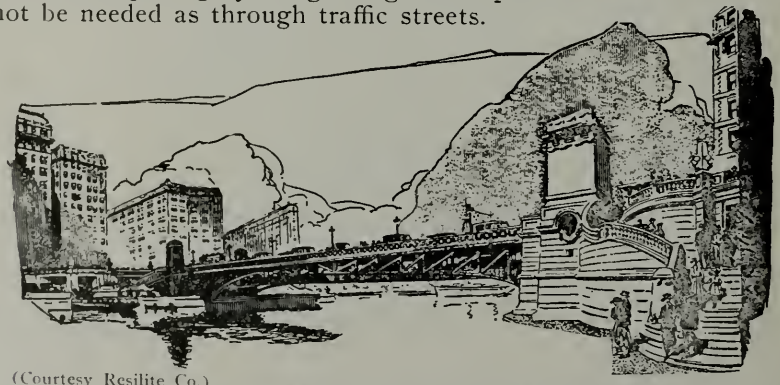
(Courtesy Water Bureau)
BULL RUN LAKE AND ITS WATERSHED (in the foreground) are the source of Portland's water supply, and already in the city's control. Additional areas nearer Mt. Hood are now recommended for acquirement as part of the city's permanent park system.

This plan does not contemplate all these improvements at once, nor for some time to come. In fact, most of the widenings shown as ultimately necessary may be put off for one, and in some cases two, decades, if the recommendations made as urgent are put into effect reasonably soon, and always in accordance with such a pre-determined plan. Establishment of ten foot building set back lines, on each side of many of the Major Traffic Streets now only sixty feet wide, will suffice for a number of years.

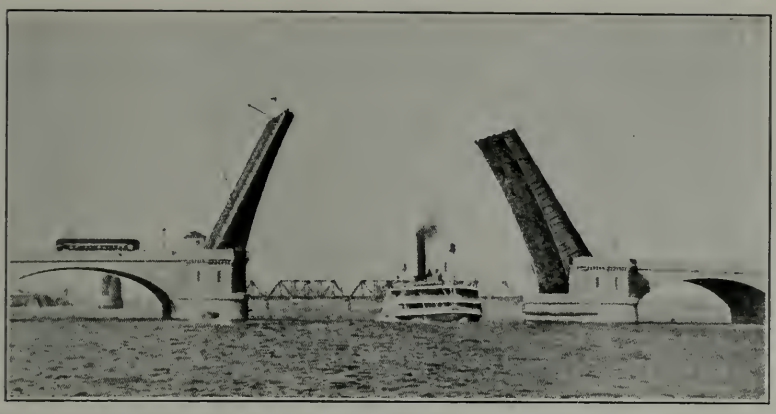
Benefits Expected From Adoption of a Major Traffic Street Plan.

Mr. J. C. Ainsworth, prominent banker and president of the Portland City Planning Commission, says of this report: "The Major Traffic Street, Boulevard and Park System plan will go far to solve many of the city's most serious problems.

"This plan, if adhered to, will save thousands of dollars of needless overwide street paving by designating the 85 per cent of our streets which will not be needed as through traffic streets.



(Courtesy Resilite Co.)
THE NEW DOUBLE DECK BASCULE BRIDGE ON MADISON AVE., CHICAGO
(Over the Chicago River).
The upper deck carries boulevard traffic and the lower deck the heavy trucking and commercial vehicles.



SHERZER PATENT BASCULE BRIDGE, TOLEDO, OHIO.
This modern type of jack-knife opening, with all machinery concealed, is a great improvement on the old clumsy overhead steel towers and lifts.

"It will help the small home owner by establishing definitely the minor residence streets, where the burden of paving can be cut in half.

"It will save more money by stabilizing the downtown centers of traffic, thereby preventing unwarranted shifting of the retail center, with consequent depreciation and loss, while allowing for reasonable expansion of the business district in all directions.

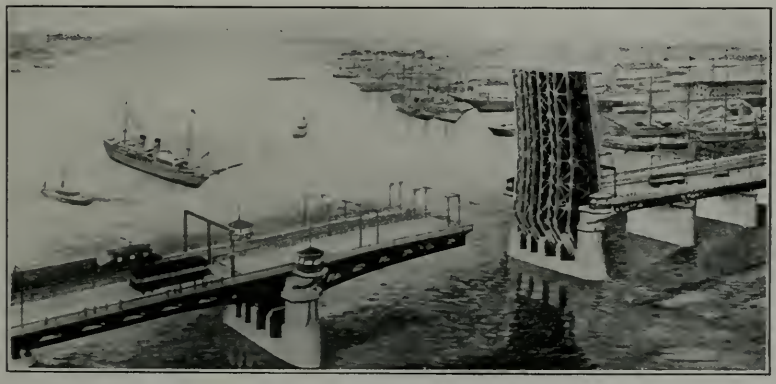
"It will save time for everyone, by relieving traffic congestion in all parts of the city.

"It will increase safety on our streets and should reduce street accidents by half, by establishing traffic streets at which a dead stop of all cars turning in from side streets can be required, as in some eastern cities.

"It provides a system of boulevards passing all the principal points of interest in the city and making the most of Portland's scenic attractions. The linked up system of highways, city and mountain drives provided, will attract tourists from all parts of the United States.

"The carefully selected locations for playgrounds and parks will save thousands of dollars to the city and the school board by eliminating duplications in playground and field house facilities.

"A comprehensive and practical plan of development is provided for us all to work to, so that investors may know where traffic is going and build accordingly."



MODERN BASCULE TYPE BRIDGE PLANNED FOR WEBSTER STREET, OAKLAND
Harrington, Howard and Ashe, Engineers.

THE FIGURE EIGHT, COLUMBIA RIVER HIGHWAY
The fine grove at this point is recommended for acquirement as part of Portland's Park System.

Report of National Conference on City Planning Held at Pittsburg, May 1921

By CHAS. H. CHENEY,
Delegate from Portland, Berkeley and Alameda

GREAT activity in many cities in enlarging street systems built for horse drawn vehicles into wide, safe and modern automobile thoroughfares, general establishment of zoning regulations to protect industries and homes, and the linking up of large metropolitan park and boulevard systems before land gets prohibitive in cost, were the three outstanding features observed in process of solution, in some fifteen cities of the country visited en route to the National City Planning Conference at Pittsburg, or discussed during its sessions. About 300 delegates attended the sessions of the conference, representing cities in all parts of the country, including city officials, city planners, city engineers, etc.

John Ihlder, manager of the civic development department, United States Chamber of Commerce, one of the principal speakers at the conference, discussed "The City Plan, and Living and Working Conditions."

"Time was when a natural harbor on the coast, a navigable river inland, determined the location and size of a city," declared Mr. Ihlder. "Then man made or improved the harbor and the railroad changed the trade routes and established new ports and new inland cities. So Salem dwindled while Boston grew. Now the airplane promises changes as great as any of the past. Heretofore the topography of a city's approaches has been of first importance, barring unusual cases like that of Pittsburg with its mineral wealth. Depths of channels, grades of hills largely determined the volume of a city's business, whether transport was by sailing ship or by steamship, by mule back, wagon or railroad. As transport by air takes the place of transport on the earth's surface, those factors will be of diminishing importance, and other factors will be of increasing importance."

Major Traffic Street Plan

St. Louis is rapidly opening major traffic streets and thoroughfares in accordance with the Major Traffic Street Plan adopted in 1917, as shown by the report of Harland Bartholomew, consultant to the St. Louis City Planning Commission.

"We are widening 12th street north for twelve miles to a width of 100 feet, to furnish one of our most needed cross town thoroughfares. Five miles of this widening is through solid buildings which will have to be cut off," he said. "For the first block north of Washington street at the center of the city, where there are now two high office buildings, the ordinance passed by the city council merely takes an easement for this block for the necessary widening, leaving the building owners the right to use their buildings for forty years, above the first story, provided a sidewalk arcade is left on the ground floor. If the buildings are torn down or destroyed in the meantime the new structure must set back to the widening line." (This method of arcading is somewhat similar to that proposed for the widening of Alder street in Portland.)

"Lindell avenue was widened to 100 feet as a continuation of Olive street, in some places having been only 59 feet wide. The owners were averse to giving up their buildings, so we condemned the land and buildings, but gave the owners back easements to keep the use of their buildings for ten years, in order to amortize the building value destroyed. The same owners later came to realize the importance of having the wide street and its traffic immediately, and had us amend the ordinance, to bring the full widening about immediately.

"Several miles farther out, 12th street passes through our new Northwest Industrial Zone, where $30,000,000 worth of new industrial plants have recently gone in. The General Motors Co. had its new $7,000,000 plant started and excavated within the lines of the needed street widening. We succeeded in convincing their officials of the importance of having a 100 foot thoroughfare passing by their property, and prompt co-operation in moving their buildings back saved the city $500,000 in cost, and two years' time that would have been necessary to complete condemnation proceedings."

Cleveland and St. Louis each have a total of approximately 950 miles of streets, and about one-fourth of this mileage has been included in the Major Street Plan, for widening or extension.

Cleveland proposes to widen 98 thoroughfares, totaling 190 miles in length, and St. Louis 50 streets, totaling about 69 miles.

Cleveland intends 37 street extensions, aggregating 23 miles in length, and St. Louis 21 street extensions, aggregating 17 miles.

St. Louis already has widenings ordered by ordinance, under construction or completed, totaling 22.49 miles and extensions amounting to 6.22 miles.

A comparison of the openings, widenings and extensions proposed in the Portland Major Street Plan is now being prepared and will be issued shortly. Although only one-third the size of St. Louis or Cleveland in population, Portland already has some 1500 miles of platted streets.

At the National Conference several speakers from Pennsylvania emphasized the savings made in widenings under the Pennsylvania law which says (Section 12, Act of May 16, 1891, P. L. 20):

"No person shall hereafter be able to recover any damages for any building or improvements of any kind which shall, or may be, placed or constructed upon, or within, the lines of any located street or alley after the

(Copyright by Fred H. Kiser)

ONEONTA GORGE, COLUMBIA RIVER HIGHWAY. Recommended for acquirement as part of Portland's Park System.

(Courtesy Hicks-Chatten Co.)

LATOURELL FALLS, ON THE COLUMBIA HIGHWAY.
Recommended for acquirement as part of Portland's Park System.

same shall have been located or ordained by council." This act has been sustained in the courts.

Mr. James D. Hailman, secretary of the citizens' committee on city plan of Pittsburg, said:

"In Pittsburg the citizens' committee is formulating a major street plan. A special point has been that of planning for the development of routes through which traffic may be 'by-passed' around the downtown business district.

"The object of a major street plan is to secure more direct, definite and ample routes between residential districts and business or industrial districts; similar routes between business or industrial districts; routes between residential districts; continuous cross-town arteries, and routes through which traffic may be 'by-passed' around the business district.

"It is proposed to eventually widen 106.15 miles now existing and to add in new streets or extensions 19.94 miles to the system, over 100 streets in all being affected."

Street Accidents and Traffic Regulations

The rapid increase in street accidents due to the greatly increased number of automobiles was noted in each city visited, and a comparative table for the principal cities of the country will shortly be ready. Portland's 8800 street accidents in 1920 were approximately as bad as Los Angeles' 17,700. The 1000 accidents reported in Portland in January, and 950 in May, may be compared with Los Angeles report of 2320 for March and worse than 2000 for every month since last August. On the other hand Washington, D. C., with its wide streets, reports only 520 street accidents in April and only 4700 for the year 1920.

Every city visited seemed very cautious about establishing one-way traffic, except on very narrow streets, or on those of less importance.

"No turning to the left" at the main intersections down town, was the regulation quoted by most traffic officers as having produced the greatest relief of congestion.

In order to prevent structures from building on strips needed for widening streets that the city has decided to enlarge, Cleveland has by ordinance No. 52,247-A established building set-back lines on each street frontage on either side of a street where fifty per cent or more of such frontage between two intersections of streets is improved with buildings that are set back from the street line. This ordinance is considered temporary only, but already it has resulted in a considerable number of buildings being set back on outlying portions of Euclid avenue, and other streets.

A new ordinance has now been drawn up, much more comprehensive in character, establishing building set-back lines which vary in different parts of the city and referring to them by map adopted with the ordinance.

Flint, Michigan, a manufacturing city of 103,000 population, reported at the National Conference that new buildings erected on main thoroughfares established on their Major Street Plan for widening, are required to observe the necessary set-back line. In this manner the final street area is kept free from encroachment, and widening can be done at nominal cost when required. Ten miles of main thoroughfares were secured during the past year by gifts, purchase and condemnation. Two 80 foot main thoroughfares required by the City Plan were secured in one case by the redesign and restaking at public expense of a forty acre plat outside of the city.

Tennessee has recently passed an act authorizing the establishment of building set-back lines in the larger cities. California and Oregon already have such enabling acts.

Supervision of Sub-Division Map Filing

An increasing number of states and cities are requiring more careful scrutiny of maps of new sub-divisions offered for approval, adding to the duties and veto power of the City Planning Commissions charged with this work. Ohio gives all City Planning Commissions jurisdiction for three miles beyond the city limits, as also in California and Oregon.

A number of Ohio cities now require 5 per cent in area of all new subdivisions to be permanently dedicated for park purposes, we were told in Cleveland.

Street Trees and Sidewalk Parking

El Paso, Texas, has worked out a system of allowing one or more blocks of any street to sign up the property owners, name a trustee and collect a comparatively small assessment for the original planting of sidewalk areas in trees and shrubs, and for their yearly maintenance.

Berkeley and other California cities, under the state law of 1913, have similar parking districts established. The Northbrae district in Berkeley levied a 5 cent per front foot tax, which will maintain the sidewalk parking for five years, the tax being entered on tax bills by the city council but administered in a separate fund.

Boulevard Systems

The Kansas City boulevard system remains the most completely developed and linked up of any in the country, with Chicago a close second. These boulevards are from 150 to 300 feet wide in most cases. The few 80 foot boulevards (so-called) in Chicago appeared inadequate and a very poor substitute for the splendid 300 foot to 500 foot parkways which connect most of Chicago's finest parks, in continuous drives through park lined roadways.

The 300 foot wide Roosevelt Road in Philadelphia, seven miles long, is typical of the splendid outer circuit boulevards being constructed in many cities.

Park Systems

Fairmont Park in Philadelphia, of nearly 3800 acres, with its river, and fine bluffs and gulches, is probably the country's finest large park within close distance of a city's center. Los Angeles' 3500 acre Griffith Park, as yet undeveloped, has great possibilities.

The larger cities are establishing several municipal golf links, as demand for this game has increased enormously.

Boston's wonderful Metropolitan Park System includes several large wild parks, chief among which is the Middlesex Fels, purchased for the water department. Here Frederick Law Olmsted, the distinguished landscape architect, showed us how he had succeeded in getting the water department to put in its dam with uneven contours, which he moulded like the natural surrounding country, and planted in kind, so that this reservoir resembles a beautiful natural lake, and is not the unnecessarily ugly square basin so often perpetrated upon an unsuspecting public.

Baltimore has a splendidly maintained park system, receiving 9 per cent of the gross annual revenue of the street railway system, under the terms of its franchise.

Forest Reserves and Metropolitan Park Systems

Many cities were observed organizing park systems far beyond their boundaries, in order to tie up wild parks, mountains and streams, with easy and attractive approaches, to the congested city centers.

In Cleveland the Cuyahoga County park board is acquiring several thousand acres of continuous parks and forest in a semi-circle around the city, about 15 miles out from it. They started with a campaign for gifts of parks that would fit in with their previously adopted comprehensive park plan, in much the same way that Portland is now seeking gifts. After they had secured several hundred acres by gift, the legislature recently authorized a scheme of ten year bonding tax that will produce several million dollars and permit of the acquirement and maintenance of the complete system planned.

In Boston the Metropolitan Park Board has acquired several thousand acres of the Blue Hills, south of the city, as a park reserve.

In Chicago over 10,000 acres in continuous strips has been acquired by the Board of Forest Reserve of Cook county under state authority, at an average cost of about $370 per acre.

Recreation and Playgrounds

In Oakland the Recreation Board leases some 50 school grounds and parks, and supplies them with play directors every day in the year, the Board of Education appropriating its quota for physical education in the joint employment of Physical Directors and Playground Directors. This playground system seems to have been carried to the greatest development of any in this country.

Chicago now makes use of 45 school playgrounds, supplying apparatus and play directors after school hours. A number of other cities in the East were noted as making increased use of their expensive school plants.

Berkeley is now acquiring through the Board of Education the playgrounds needed in practically every school district of the city, as the result of the $2,300,000 bond issue voted in 1919. Berkeley has acquired for $300,000 the high school recreation field and site in the center of the city, recommended by the City Planning Commission. The Playground Commission will operate all school playgrounds.

Art Juries and Civic Centers

New York, Philadelphia, Los Angeles and other cities with Art Juries are getting more for their money in new fire houses, bridges across streets, etc., and are in this way becoming more attractive as places to live in than many of our coast cities. They have established these Art Juries with absolute veto power over all new public structures, statues and works of art. It is only by having such a competent committee as this to say whether the quality of design of structures on which public money is spent is up to a certain artistic standard, that a city council can be sure that it will not get a shoddy result. Proud as we are of some of our recent public buildings on the coast, we must be blind not to see that these other cities are securing better and more attractive results, with a higher artistic standard than we are getting.

In Cleveland the Chamber of Commerce gives annual prizes each year for the finest architecture built during the year. A similar system in coast cities ought to stimulate better buildings.

In conclusion it is evident that Pacific Coast cities cannot too soon adopt many of the above methods of practical city building. We need not delude ourselves that our narrow traffic streets or boulevards are going to impress visitors or new settlers from Kansas City, Chicago and other cities where they have been used to wider streets and ample connecting parkways and park systems.

HOUSE OF MR. R. W. PETERSON, SANTA ROSA
R. W. Peterson, Designer.

California Residence of Monolithic Concrete

By J. D. SULLIVAN*

The large monolithic reinforced concrete residence of Mr. Rafold W. Peterson, Santa Rosa, California, built in 1913 and now receiving the full effect of the surrounding vines, trees and shrubbery, is one of the most attractive homes in that city.

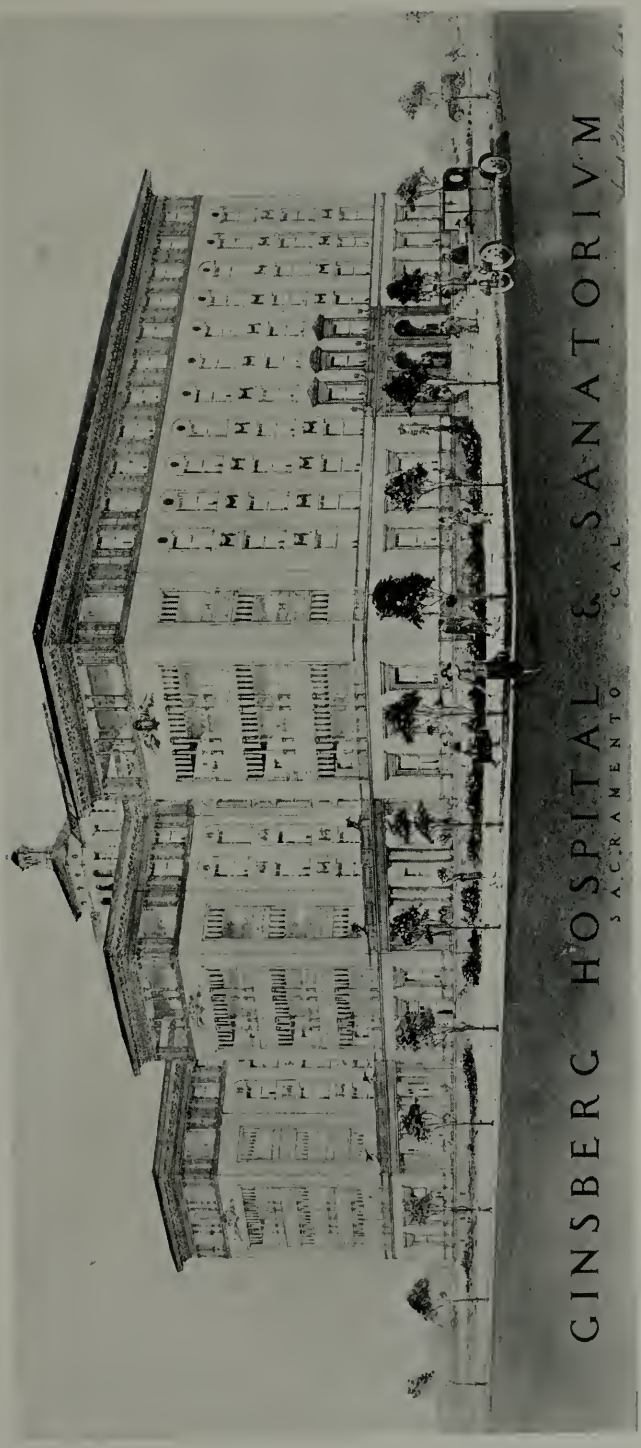
The plan is very conveniently arranged. The first floor consists of a wide entrance hall, a spacious living room, a dining room, breakfast room, kitchen, a den and a screened porch in the rear. The second floor consists of four bed rooms, a bath room and a sleeping porch.

The exterior walls are of reinforced concrete ten inches thick, covered with Portland cement stucco. Basement walls are coated with a waterproofing compound. The main roof and that of the pergola are Spanish tile. The roofs of the large front porch and the pergola are supported by concrete columns. Porch and pergola floors are concrete covered with a dull red cement finish. The interior floors, the basement stairs, the two chimneys and fireplaces, and the first floor partitions, are all of reinforced concrete. The partitions are four inches thick. The only wood construction used in the building is in the second story partitions, where ordinary wood studding was used, and in the main stairs, which are of oak.

The building was designed by the owner, who is an architect. The writer was the contractor.

*Contractor, Santa Rosa, California.

HEBREW HOME FOR AGED DISABLED, SAN FRANCISCO.
SAMUEL LIGHTNER HYMAN, ARCHITECT.



HOSPITAL FOR THE GINSBERG HOSPITAL ASSOCIATION, SACRAMENTO. SAMUEL LIGHTNER HYMAN, ARCHITECT.

Test Results Upon Reinforced Concrete Slabs

In order to obtain definite data upon this subject a sub-committee was formed by the Concrete Institute some time ago, firms interested in the high-tensil reinforcements being represented.

A paper upon the results of tests conducted by this committee was recently read by Mr. H. Kempton Dyson before the Concrete Institute, and should be studied in detail by all interested in the subject.

The tests were made at the Manchester College of Technology; the following table gives the summary of results of the slab tests:

Slab mark	Actual area of steel used in square inches.	Working moment of resistance in tension in inch pounds.	Ultimate moment of resistance in inch pounds.	Actual factor of safety in tension
A	8954	75,800	272,200	3.59
B	8954	75,800	278,700	3.67
C	7575	64,300	235,200	3.65
D	7443	64,300	229,400	3.56
E	6057	65,400	183,600	2.81
F	6057	65,400	176,900	2.71
G	5892	63,700	251,500	3.95
H	5892	63,700	247,900	3.89
J	5892	63,700	249,500	3.91
K	5892	63,700	260,600	4.09
L	589	63,500	309,200	4.86
M	589	63,500	297,200	4.67

Test results upon reinforced concrete beams and slabs.

Slabs A to D were reinforced with mild steel bars, calculated at 16,000 lbs. per square inch; slabs E and F had shell discard steel calculated at 20,000 lbs. per square inch; G and H had "spiral band" bars calculated at 20,000 lbs. per square inch; J and K "indented bars"; and L and M drawn-steel wire calculated at the same stress—Engineering Review, London.

* * *

School of Architecture

An unique school of architecture is to be added to Princeton University. Headed by Professor Howard Crosby Butler, dean of the present architectural department in the new system, the teaching force will not consist of a few appointed and resident instructors, but will be composed of a staff of architects each of whom will visit the school. Among those already engaged are Messrs. Grant La Farge and Lloyd Warren of New York. The degree to be given for work in this course is Master of Fine Arts.

* * *

To Solve Housing Problem

Secretary of Commerce Hoover has appointed seven professional men of national standing to assist his department in solving the housing problem. The list is headed by Messrs. Ernest J. Russell of St. Louis, and Edwin H. Hewitt of Minneapolis, Fellows of the Institute; Ira Woolson, consulting engineer of the American Board of Fire Underwriters; Rudolph P. Miller, engineer in charge of New York building ordinances; J. A. Newlin, of the University of Wisconsin; W. H. Hatt of Purdue University, and J. R. Worchester, consulting engineer, of Boston.

Curtains that Give Character to a Room

By MARGARET RYAN in House Beautiful

MUCH of the charm of the interior of a house depends upon the selection of the window curtains and their hanging. Upon them devolves the responsibility of tying the room with furniture, and of blending it into one harmonious, restful whole.

The selection of the materials for this tie-that-binds cannot be made without due deliberation, for it is far better to think before hanging your curtains than to repent in leisure after a hasty decision.

The color of the curtains, the material—heavy or sheer— from which they should be made, whether they should be figured or plain, long or short—all the ten, more or less, commandments of curtain selection may be condensed into these two: they must combine simplicity and practicability; they must be harmonious with both the character of the room and the architectural style of the windows; harmonious in color, texture, and design.

In addition to over-draperies, which play such an important role in the decorative scheme of the room, there should be glass curtains, usually of a neutral tint, to subdue and diffuse the light streaming through the windows. A soft transparent material will mellow the brilliancy of the sunshine and transform its dazzling brightness into a pleasant glow. It gives to every part of the room a different color value, so its hue must be carefully selected. If too deep a cream, for instance, it may ruin the good color relations of the furnishings by casting over them a strong yellowish tinge. Experiments in rooms of various exposures show that if the glass curtains are kept neutral in shade—beige, pale cream, or oyster-white—the scheme of decoration is safe enough.

For the over-curtains, there is an infinite variety of materials now on the market from which to choose, and some of the most charmingly decorative are within the reach of the modest purse. Crisp taffeta, poplin, and Jap silk, plain or in splashing stripes and bright conventional designs, are replacing the more elaborate brocades and damasks once thought so essential for a truly beautiful interior.

Simple silks, some of them in beautiful colorings and guaranteed Sunfast, combine well with all types of furniture, especially the cottage varieties.

The old English and Chinese chintzes are strong and simple, and the modern cretonnes are, for the most part, very lovely. Cretonne, when it is good, is very very good, and when it is bad it is horrid; but the designs are constantly improving, and it is easy to distinguish between the bad and the good. The newer ones with their clear, virile colors on strongly contrasting backgrounds are invaluable for carrying out the color scheme of the room.

The windows in the living-room must contribute their bit—and a large bit it is—toward making that room really livable. Heavy velvet or brocade curtains in the living-room of the average home would be sadly out of place. For one thing, they smother the joy and beauty of the out-of-doors seeking to enter through the windows, and to me, they seem always to offer harbor to countless little moths intent on finding a base of supply from which they may fare forth intent on working havoc. But the heavy blue taffeta hangings of one living-room of my acquaintance offer no such refuge to the enemy, and a more charming window treatment can scarcely be imagined. The three windows forming a group at one side of

At a glance one sees that this is a man's room. The broad black band of the cretonne has a note of virility in it. The smaller photograph shows use of decorative knobs for looping back curtains.

the room filter the sunshine through glass curtains of gold-silk gauze, over which the heavy Copenhagen curtains are draped, and held back by mulberry ties edged in gold.

The furniture is upholstered in soft taupe velvet. Pillows of mulberry are disposed on the great davenport, and a reading-lamp with a mulberry-silk shade, fringed in gold and Copenhagen, stands by the great wing chair. The greatest part of the charm of that room is due to its curtaining; yet, upon entering it, guests invariably exclaim, "What a delightful lamp! Such a comfy davenport!" That is the truest test of successful drapery, so to blend itself with the rest of the furnishings that it seems but an inseparable part of the background.

A living-room in which anyone would enjoy going into a brown study is curtained in a Sunfast material in which gold predominates, and its light and color brighten the room, which is furnished in varying shades of brown and tan.

Long French windows sometimes give one a vista too beautiful to be concealed by heavy draperies. Ecru silk net is transparent and when framed at the sides with narrow hangings of an old French block chintz in glowing colors, the effect is most attractive. Across the transom at the

These curtains of snowy voile, scrim, or swiss muslin suggest the charm of simplicity in window drapery.

top of the window there should be a shirred balance of the same chintz.

The library with dark paneled walls needs an enlivening touch of color in its draperies, yet they must be in tune with the spirit of the room—restful and soothing. Harmonizing with oak panels and dark Jacobean furniture are hangings of blue-green rough silk, whose subdued coloring relieves the "brownness" of walls, rugs, and furniture, and tones down the accessories of orange and bright yellow.

If properly introduced into a room, orange gives life and warmth, and these we must have in our living-room. While the use of orange hangings is rather daring, they are unusually beautiful if they can be made to seem a part of the room. Of course, the walls must be plain, perhaps of a delicate cream stenciled in orange and gray. Paint the woodwork a deep cream, and use furniture painted the same color and upholstered in orange tapestry, or walnut furniture upholstered similarly. Curtain the windows with plain filet, with an orange thread at the edge, over which drape orange hangings with a band of gray or green at the bottom and on the stretched edge of the valance. The curtains strike the dominant note of the entire scheme, and an exceptionally unique one it is.

A young girl's room is appropriately curtained in white net with drapes of a rough silk exactly the shade of the Killarney. The same color glows and vibrates throughout the whole room—furnishings, rug, lamps, and accessories—with only the ivory of the furniture and toilet articles to break the rosiness. Yet the color is so lovely that one could never find it monotonous.

The valance on a curved rod for a bedroom window is always interesting. It should be made with a deep hem and the curtains hung from behind it. Marquisette, voile, casement cloth, or even cheesecloth may be used effectively. The glass curtains may be very sheer on the bedroom windows, and sometimes may be entirely omitted.

In the guest-chamber of a very delightful country home, the hangings give just the needed note of color and life to the room, with its warm gray floor covering, gray woodwork, and cool, delicately figured walls of green and gray. The furniture is stained the same soft tone, and the long windows are hung with mulberry Sunfast, edged in yellow.

Curtains for bedrooms, children's rooms in particular, may often be purchased at the dress-goods counters in department stores, rather than among the authorized draperies. The use of gingham is particularly fetching in a child's room. There was a row of high casement windows along the side of one room I have in mind, hung with short rose-and-white checked gingham curtains. The floor was covered with a rose rug, and the oyster-white walls stenciled in rose. Emerald-green cottage furniture was used in this room, and the bedspread and cover for the chest of drawers were of the same checked gingham used to dress the windows.

Dotted Swiss, ruffled muslin, voile, and cheesecloth may be fashioned into the daintiest of window coverings. Hemstitched in a color—orange, blue, or even red—these simple materials acquire a distinction all their own. After all, it is the display of ingenuity in evolving effects that are fresh and attractive that makes the curtains of your home something to conjure with.

Even the skylight may be developed into an asset to your attic room instead of a mere necessity for its light and ventilation. The most satisfactory curtain arrangement for a skylight that I have ever seen was a pully-and-cord contrivance by which the drapery could be adjusted so as to admit more or less light as the occasion demanded. The material was a golden-brown Sunfast, which tempered the glaring light of midday, and when but partially drawn, framed the glow of the setting sun.

When you think of a sun parlor, you inevitably think of many windows curtained in bright chintz, comfortably cushioned wicker furniture and growing plants—a room of cheer, first and foremost. The expanse of glass in the sun parlor is best curtained with a long valance with the draperies at the intersections. Purple, green, and orange chintz combines well with neutral-tinted walls and floor, and when repeated in the upholstery of the easy chairs and couch, makes a room where the whole family loves to sun itself.

The use of graduated flounces is particularly good for chintz, taffeta, or any plain material. They break the length of French windows and apparently reduce the height of the ceiling. The flounces are stitched to a backing, and grow wider toward the bottom.

Double-sash under-curtains of net give a pleasing effect at living-room windows, especially with over-drapes of mauve-and-green-striped linen, linking the mauve-enameled furniture striped in green with the rug of beige.

The arched window presents its own problem, and problem it is to the amateur decorator. When the window is of leaded glass, and has architectural value of its own, it should be curtained with a sheer fabric so that its light may not be hidden under a bushel. The curtaining edge with crystal drops may be shaped and hung from the arch, or may be semi-draped and caught at either side with a cord and tassel.

When the arch has no distinctive interest, or interferes with the decorative scheme of the room, it can be filled with a gathered fabric, and caught with a rosette of the same color as the piping on the drapery. The glass curtains should be of net or gauze.

The casement window, so frequently used in dining-rooms, admits of more attractive treatments than any other type. One of the best methods of curtaining the casement window is with an over-all valance and curtains at either end.

It is a pleasant custom to have the curtains in the dining-room either the same as, or in harmony with, the cloth on the table. One delightful dining-room has glass curtains of cream-silk net over which are drapes of apple-green linen. On the deep-green painted floor are braided rugs of gray, rose, green, and gold, and the cottage furniture is a soft yellow with green-and-violet motifs stenciled on the backs of the chairs.

On each corner of the square green-linen cloth which covers the table, there is a black cross-stitch basket of gay flowers, and standing in the center of the table is a cream-and-black lacquered wicker basket filled with fruit.

To return to curtains, those of the bedroom should and do receive the utmost consideration, but the namby-pamby pink-and-white effects that some people seem to consider conducive to peaceful dreams, are usually weak, too lackadaisical. It is better to introduce a strong clear color as the dominant note and build the room about it.

The cretonne used for draping the window may be repeated in the upholstery of the wing chair so closely associated with bedroom comfort. While the use of the boldly figured cretonne, bound with a plain color, is more effective, curtains of silk are often preferred.

* * *

Civilization and Bath Tubs

Mr. Arthur Brisbane, stopping at the Ponce de Leon Hotel, St. Augustine, Fla., finds many things in that ancient city to remind him how much the world has changed even in the short life of our country. Local records show, for instance, that Menendez, one of the early owners of St. Augustine, reported to his king, Philip Second of Spain, that after securely tying the hands of some forty Frenchmen who surrendered to him, he had stabbed everyone of them to death!

"One striking change in civilization in this hotel," writes Mr. Brisbane, commenting on Menendez's heroic exploit, "has happened in the short young life of Thomas Hastings, architect of the New York public library, who is barely fifty, and who, when almost a child, built this Ponce de Leon Hotel.

"Hastings—he will blush to see it printed—put **six** public and **three** private bathrooms in his hotel of **three hundred** bedrooms and proudly exclaimed, 'I call that up-to-date hygiene!'

"Now they have one hundred and eighteen bathrooms in the hotel, having sacrificed eighty or ninety bedrooms to get them. There is as much meaning for civilization in those 118 bathrooms as in the fact that we no longer tie up and stab to death men that surrender."—Valve World.

Fire-Safe Roofs for Suburban Homes

By PREVOST HUBBARD, Chemical Engineer*

NO building is more weather-proof or fire-safe than its roof. Any structure that is roofed with materials susceptible to fire or weather conditions is not only an uncertain investment, but an actual menace to health and life. Fire plots its course from one inflammable roof to another and unless there are roofs that raise a barrier to the progress of the flames the property owners of the neighborhood are carrying a big fire risk, and the buildings constitute a great menace to the community.

That a realization of these essential facts has been driven home in recent years to real estate dealers, housing experts, home owners, architects and contractors is shown by the tremendous increase in the production of patent roofing during the past twelve years as contrasted with the production of wood shingles in the same period. During this period patent roofing advanced from 8,200,000 squares in 1908 to 30,600,000 in 1919, while red cedar shingles slumped from 8,700,000 to 7,400,000 squares. The roofer's square equals 100 square feet.

There are in the United States over forty factories engaged in the manufacture of asphalt shingles and prepared roofing, representing with their allied interests an investment of more than $150,000,000. It has been conservatively estimated that the daily output of these factories exceeds 7,500,000 square feet of finished material.

Twenty-five years ago comparatively small quantities of asphalt roofing were manufactured. Many roofs of this material, however, have lasted for over twenty years and asphalt shingles are now generally guaranteed for a period of ten years. Time has demonstrated the durability of asphalt and its propensity to "stay alive," and not to harden unduly through loss of volatile oils. As compared with other bituminous roofings it shows less softening in hot weather and more pliability during cold weather. Contraction and expansion under changing weather conditions have been found to give practically no trouble and there is little danger of cracking and breaking.

Asphalt shingles are usually manufactured of rag or asbestos felt, thoroughly saturated with asphalt. On top of this is placed a heavy coating of harder asphalt which thoroughly waterproofs the shingle and into which, while hot, is rolled mineral matter, such as crushed slate or feldspar, colored green, gray, red or brown as desired. This roofing is much less inflammable than the wooden shingle and its use is now permitted in restricted districts in which wood shingles are prohibited by the fire regulations.

When an asbestos felt is used in the manufacture of asphalt shingles they are extremely fire-resistant and "non-combustible" and take the same rate of insurance as slate, metal and tile. Slate weighs from 650 to 800 pounds per 100 square feet while tile weighs between 950 and 1,200 pounds. The asphalt shingles average 220 pounds per 100 square feet or about the same weight as that of wooden shingles. Prepared roofing in rolls, varies from 35 to 100 pounds. The asphalt shingles wear for ten to fifteen years and do not curl or "lift up," blow off the roof or flap in the wind.

Many of the more important cities and towns in this country now require fire-resisting roofing within their fire limits. Among these are Birmingham, Ala.; Jacksonville, Fla.; New Orleans, La.; Hoboken, N. J.;

*Author of "Dust Preventatives and Road Binders."

Paterson, N. J.; Perth Amboy, N. J.; Allentown, Pa.; Trenton, N. J.; Reading, Pa.; Easton, Pa.; Paris, Tex.; Montgomery, Ala.; Tampa, Fla.; Newark, N. J.; Jersey City, N. J.; Cambridge, Mass.; Chelsea, Mass.; Lawrence, Mass.; Fall River, Mass.; Somerville, Mass.; Salem, Mass.; Lynn, Mass.; Wilmington, Del.; Columbus, Ga.; Augusta, Ga.; Savannah, Ga.; Charleston, S. C.; Newton, Mass.; El Paso, Tex.; Lexington, Mass.; Norfolk, Va.; and Portsmouth, Va.

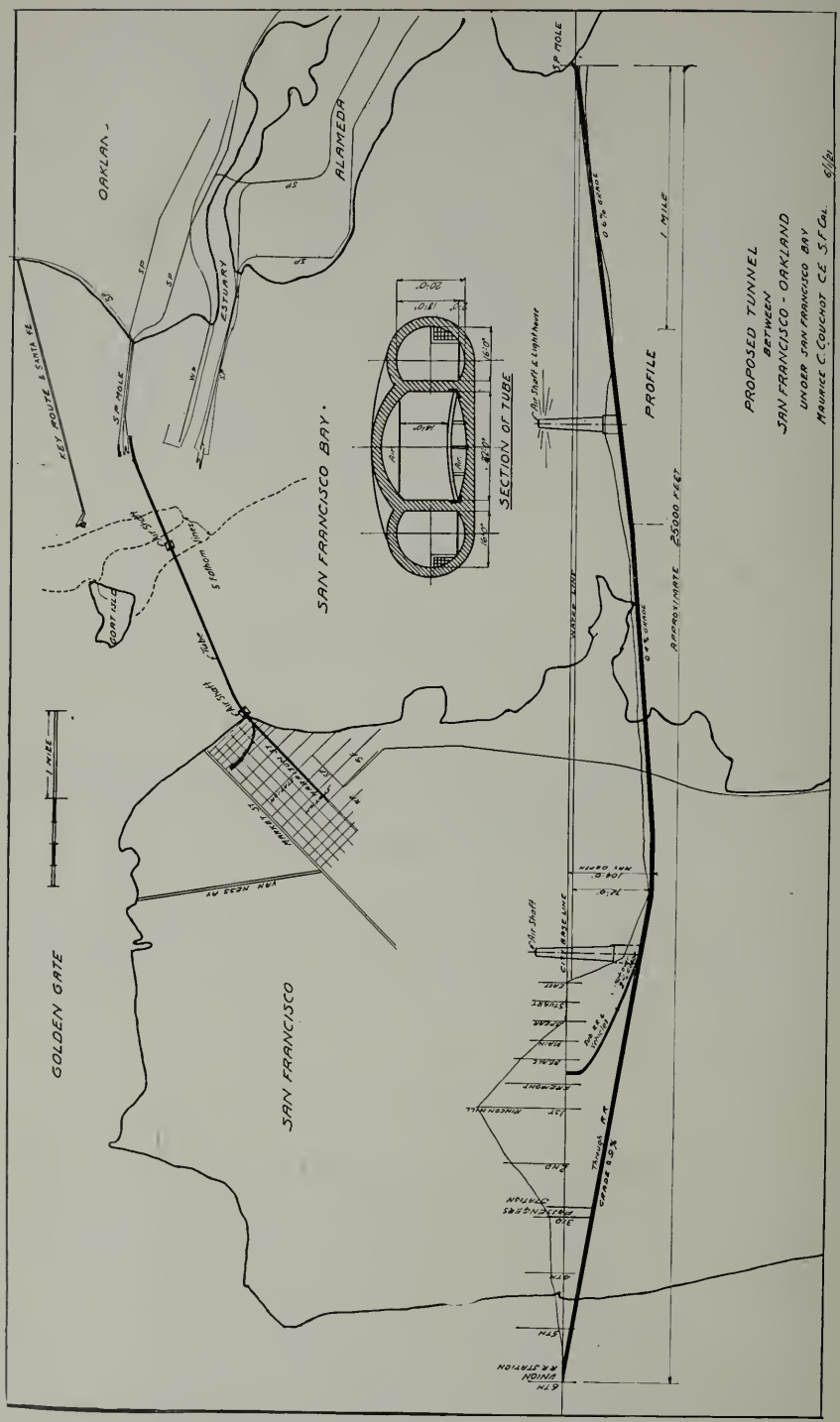
The graceful, free lines of a shingle roof have been so intimately associated from pioneer days with the architecture of American houses that the shingle roof can almost be called the national roof for the American home. No roof construction offers so many varied effects or permits such artistic treatment as the shingle. The new home not only merits a roofing that will enhance its architectural beauty, but it should have protection from fire and permanence under variable weather conditions. With a liberal field from which to make selections of color, shape and methods of application a roof of artistic appearance, as well as of long durability, can be chosen by the home-builder or his architect, from among the many types of shingles designed to meet different requirements.

UNIQUE ISLAND HOME NEAR BALBOA BEACH, CALIFORNIA

Unique Island Home

One of the most novel homes ever constructed is the one in the accompanying photograph. The island contains only a few acres of ground and lies off the coast of California in the bay a short distance from Balboa Beach. It is almost circular in shape and edged all around by a concrete wall. The summer home and the gardens completely cover the small island.

The house was constructed and the gardens laid out in 1916, but the owner has never yet lived there, in fact the house has never been occupied except by its caretaker. So far the only use it has been put to is to form a romantic background for motion picture actors, the last to use it being Roscoe Arbuckle.



TUBE PLAN FOR TUNNELING SAN FRANCISCO BAY.
MAURICE C. COUCHOT, STRUCTURAL ENGINEER.

Tube Plan for "Bridging" San Francisco Bay

MR. MAURICE C. COUCHOT, C. E., has submitted the following suggestions to the Motor Car Dealers' Association Bridge the Bay Committee, and the report is finding favor with many who have given serious thought to the project:

Motor Car Dealers' Association "Bridge the Bay" Committee,
San Francisco, Cal.

Gentlemen:

I take pleasure in submitting to you for your consideration a project for the "Bridge the Bay" movement, which is an idea expressing a possible solution of the problem. The scheme is of the tube class.

It is realized that at the present moment, without any data accessible in the way of borings and soundings (except U. S. Geodetic Survey Maps), no engineer can offer any definite design, or submit any tangible estimate of cost.

It is proposed to start the San Francisco end of the tube on Folsom street, or Harrison street, at Fifth street; following either Folsom or Harrison to East street; thence under the bay, as shown on plans and profile, and reaching either the north or south side of the Southern Pacific Mole; or possibly the north side of the Western Pacific Mole; this point to be decided after foundation data is obtained. The approximate total length of this project is 25,000 feet.

In the selection of the above route, the following reasons are offered:

First. The work from Fifth street to East street, on either Folsom street or Harrison street, passes under Rincon Hill, and for 8,000 feet, more or less, is in solid rock, which offers the best conditions for tunnel operation and construction, and can be closely estimated, and avoid the softer strata which exists both on the north or south side of Rincon Hill.

Second. The distance from East street, at either Folsom or Harrison streets, to the Southern Pacific or Western Pacific moles, is the shortest between shores; and according to the U. S. Geodetic Survey soundings, is the shallowest line, as the depth of the water between Rincon Hill and Hunter's Point to the east bay shore is practically the same. The depth is not excessive for tube construction. The existing mole, fill and structure on the east side of the bay are therefore made a part of this project.

Third. On the east side of the bay, the location is ideal for converging at this point all the transbay traffic, viz.: Southern Pacific, Western Pacific, Santa Fe, Key Route System, and is centrally located for vehicles to reach either Oakland, Alameda and Berkeley, and the country beyond.

Fourth. At, or in the vicinity of Fifth street, a union station would be provided, which would accommodate the Southern Pacific, Western Pacific and Santa Fe Railroads, as this location is close to the terminals of each of these railroads.

The grades shown on the profile are very small, the maximum being .9 of 1 per cent down to .4 of 1 per cent. This, of course, is not definitely set, but simply indicates that grades near these can be obtained.

The section of the tube shows two railroad tracks; one for incoming and the other for outgoing, with a central section for automobiles and vehicles.

It is assumed that only electric power would be used for railway operation.

The center portion shows a section 32x14 feet for the passage of vehicles, either horse-drawn or automotive, affording ample room for the passing of slower vehicles. This section can be widened or reduced if deemed necessary.

The upper and lower sections of the vehicle portion are so constructed as to provide means of furnishing fresh air and exhausting foul air, respectively, for the proper ventilation of the tube.

I realize that the proper ventilation of this project is of considerable magnitude; however, this problem can be solved after necessary studies of mechanical equipment, for forcing air with fans and location of air shafts for exhausts, etc., have been made.

I have indicated on the plan and elevation two air shafts, one located on the San Francisco shore within the pier head line, and the other one opposite Goat Island at a point which is within the two five-fathom lines. The location of these two air shafts reduces the maximum length of the tube to be ventilated to two miles, which is perfectly feasible.

On the railroad sections space is provided for telegraph, telephone, power cable and other public utilities.

No provision is made for pedestrians in this project.

It is proposed to bring one of the terminals of this project towards Market street, between Beale and Fremont streets, to take care of the suburban and vehicle traffic. This branch of the tube will rise to the surface with a grade not exceeding two per cent.

The handling of vehicles and automobiles will be done separately from passenger traffic, and proper study will be made to take care of this problem.

The tube shown on the plans under Harrison street to Fifth street will then become a double track tunnel to be used only for through passenger traffic to the contemplated Union Station previously mentioned.

It is intended to run passenger trains during the day, and freight trains during the night, with passenger service at intervals.

The project presented to you, as shown by the profile, does not interfere with the tidal prism, nor does it restrict in any way the full width of the bay for navigation; offers no obstacles to the tide movement, it being entirely under the bottom of the bay, thereby avoiding shoaling. Nor does it interfere with the Oakland harbor project, the N. U. Naval Base at Alameda, or the navigation of the Oakland estuary.

It is intended to run passenger trains during the day, and freight trains during the night, with passenger service at intervals.

In case of earthquake, I believe that the tube would offer less danger to human life than a high bridge.

The maintenance cost would be smaller for a tube than for a bridge, both having the same carrying capacity.

I realize the importance of the project, also the lack of data on which to base an exact study, therefore, offer an idea with possibilities, believing that the above suggestions combine simplicity, shortest distance, proper location, and economy of execution. For the successful accomplishment of any project along this line, it is of course understood that it must have the fullest co-operation and co-ordination of all the bay cities, all railways and railroads, as well as all public utilities.

I also take this occasion to place my services at your disposal, to assist you in any preliminary work towards the success of your campaign to "Bridge the Bay."

Respectfully submitted,

MAURICE C. COUCHOT,
Civil Engineer.

* * *

Concrete Houses and Plumbing

Increasing use of concrete in the construction of dwellings is noted in various parts of the world, more especially where lumber suitable for building purposes is not over plentiful. This, in connection with the present general shortage in housing facilities and the speed in construction certain to mark resumption of building activities, invites attention to the necessity, both from a health and an economic point of view, of laying especial stress on the quality of the piping and plumbing material that plays so important a part in the modern dwelling or building.

Even in the frame structure it is highly desirable that all piping, fittings, etc., that are concealed in the walls and between floors be of unquestioned quality and be installed with skill and thoroughness; but in the case of concrete structures—either poured or block—this is imperative. While it is a costly and unpleasant job to tear out wooden construction to make repairs in faulty piping, the cost and unpleasantness are infinitely greater where the repairs have to be made in concrete construction or solid masonry..

The investor owes it to himself to make careful study of all that goes into the structure in which he is putting his money; but the architect and the contractor owe it not only to themselves, but to their client and customer to see that he is advised more particularly along lines of quality than in the matter of cost. A slightly advanced initial expenditure most likely will insure a greatly decreased cost for upkeep.

While quality always should be the first consideration in the selection of plumbing and all other piping materials, it is highly important that it never should be overlooked on any account where such materials are to be built into the structure in places where it would be difficult and expensive to reach them should repairs be necessary.—Cement Era.

Modern Architecture

By JOHN W. SIMPSON,
President of the Royal Institution of British Architects.

IN determining the merit of modern architectural work there are certain actualities to be taken into account if we are to arrive at a true judgment. "New needs" form perhaps the chief reason for the change from what was deemed traditional design. Educational and commercial requirements, for example, have altered materially since our boyhood, and have to be frankly recognized and provided for.

Another and most important factor in contemporary design is hygiene. We are still boggling at soil, waste, and ventilating pipes, deliberately omitting them from our elevations, and letting the sanitary engineer carry them as he can, sprawling over our piers, cornices, and roofs, where they are not shamefully buried in the walls. But the apartments to which they pertain have perforce to be considered, and fenestration becomes a difficult matter; we may no longer plan majestic ranges of windows, behind which bathrooms, sinks and sanitary needs are left to be contrived as best they may. Health authorities fix the area of our windows, settle their height with relation to the ceiling, and (very properly) take no account of a predilection for unbroken wall-space, or of a desire to build according to the tradition of our forefathers; in which, I may observe, external fire-escape stairs found no place. Inside the building similar questions arise. Staircases must be enclosed, to the destruction of delightful vistas; elevators incongruous to renaissance motives, are wanted; immense conglomerations of pipes, tubes, and wires must be laid out, and planned in shafts where they can be reached for repair; light and ventilation take precedence of suggestive mystery, and the effect on plan and decoration is revolutionary.

It is useless to cry after the traditions of past days; our problems are altered, and we have to solve them in our own way. Naturally, the change is not yet complete. Fragments of old, beloved formulæ still cling to us—not only architectural; railways have existed for a century, yet there are still in use carriages which retain the lines of a stage-coach; the motor car has long been common, and, as Wells once said, "Before each still trots the ghost of a horse."

As for "national style," whether it be good or bad, it clearly exists. No one could mistake a British city for one of any other country; our national signature is written all over it. It is, nevertheless, possible that we are on the verge of such a new departure in our art as has taken place in the art of warfare, where "fighting," in the historic sense, with development of guns and swords, seems likely to give place to mere destruction by misuse of the products of peaceful industries. In our case it may well come about by frank recognition of the qualities of the machine, as opposed to obsolete methods of hand work. There is nothing inherently uncongenial in the association of machine work with architecture; the real incongruity is in attempts to maintain, or revive, mediaeval craftsmanship in the twentieth century. Its charm lay in its spontaneity, its unaffected fitness for the surrounding of its date; to imitate it is to fabricate artificial flowers, which lack life and perfume. We live in an age of machines, and true architecture must needs reflect their influence. If we set ourselves to the planning and construction of buildings supremely proper for their purpose, art will take care of itself. An artist will always solve his problem artistically. Finding inspiration in stern utility, he transmutes it by his touch into

"Some fragment from his dream of human life,
Shaped by himself. . . . . ."

—The Surveyor, London.

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THE PLUS QUALITY OF ART

The hand work which gave such great value to the decorative arts of olden times can play but a small part, owing to economic reasons, in the industrial arts of our own time. For the great majority of us, our household furnishings must be made by machinery. Yet this is not so discouraging as one would have us think. Because much that has been produced by machinery is ugly, we must not forget that machine-made industrial arts can be beautiful.

They must be beautiful if American manufacturers are to win supremacy or even hold their own, in the international competitions which is following the war. We have a great opportunity, but that alone does not mean success. When the choice is between two manufactured articles equally well made, at the same price, it is fairly safe to say that preference will be given by people of taste to the one which has, in addition, the quality of beauty. It is this **plus** quality of artistic worth which we must have more and more abundant in our American manufactures.

The responsibility of bringing this about rests with us all. We cannot leave it to the manufacturer alone. It is his function to satisfy our demand. But we are responsible for the the nature of that demand and for the support we are ready to give it. If we do not support the American manufacturer when he does create beautiful things, we cannot blame him if he gives up the effort. Now is the time to challenge and overcome this attitude of indifference before it works irreparable damage.

How do we do it? Every time we buy a piece of furniture, a curtain for the window, a rug for the floor, any object in which the element of beauty may enter, we must insist that it be beautiful, and we must give made-in-America goods their chance. Insist loud enough and long enough and in large enough number, and the retailers and manufacturers will hear us.

In familiarizing the public with what is beautiful in the arts of decoration, the art museum makes perhaps its most valuable contribution to the public weal, writes Mr. Joseph Beck, Curator of Decorative Arts, in the Bulletin of the Metropolitan Museum of Arts. Through its magnificent collections of decorative arts, the Metropolitan Museum is doing just this. It is offering to its thousands of visitors an opportunity, unparalleled in this country, for the study and enjoyment of the many varieties of beauty which are possible in the industrial arts. And through the widespread influence it exerts upon public taste, it is helping to "win the war after the war."

Notes and Comments

Next Comes the Electric Bungalow

The especial significance of the Electrical Home idea as it has been carried out by the electrical industry of the West, co-operating with western real estate firms, lies in the fact that the houses were built to sell and did not represent merely ideal conditions which the modern house owner could not attempt to attain. Recent real estate records reporting the sale of one of the most complete of these houses indicate the practical value of the idea, says the Journal of Electricity.

On the other hand, the homes as shown were perhaps somewhat more complete than the average householder can afford—and what is more, the real estate firms to a certain extent capitalized the novelty of the idea, with the result that the actual price set upon the house undoubtedly discouraged many. With the idea of showing the need for electrical equipment and its economy in the small household, the electrical industry has now taken one step farther and is about to co-operate with western builders in placing the "electric bungalow" upon the market. The first of these smaller demonstrations will be carried out in the San Francisco bay region some time this fall. The house will be an inexpensive one and the market price, including the electrical installation, will not be in any way prohibitive. It is expected that the psychological effect of this exhibit will be a salutary one and help place electric equipment where it belongs in the mind of the public along with the practical conveniences of life, rather than among the luxuries.

The Construction Industry

It is a common failing for individuals, associations, and institutions to exaggerate their own importance, says a writer in Engineering News-Record. That failing, however, cannot be charged against the construction industry. It has done its work year in and year out without making demands for recognition as one of the chief activities in American industrial life. Yet a special bulletin of the United States Chamber of Commerce advises that one-fourth of our national wealth is represented by the structures and projects built by the construction industry. Of course, this is past production, but the current importance of the industry is indicated by the fact that one-fourth of the persons engaged in manufacture are working on materials and products that the constructor will use. The reason that construction is not ordinarily visualized in this big way is that we have heretofore considered it made up of many industries and have not tried to think of these industries as a group. We speak of the cement industry, the lumber industry, the clay products industry, etc., without visualizing their relation to the construction whole. Much good will undoubtedly come to every one concerned with construction if the public can be brought to an appreciation of the importance of the industry as a whole. First, however, we must have a proper appreciation ourselves, and that must come through a closer relationship between the various factors—engineers and architects, contractors and builders, and manufacturers of material and equipment.

Why Modern Homes Have No Place For Pictures

The Bricklayer, Mason and Plasterer laments that the modern home has no place for pictures and declares that "there is little of the restful beauty that comes from the association of good pictures in the average modern home." Asking the architects why wall space in the modern home is "shunned like the mumps or appendicitis" the journal suggests: "Possibly they will answer utilitarianism — possibly they will say the people want it that way —possibly they will say that they, the architects, want things that way."

(*Continued on Page 111*)

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Over a Million in New Buildings in Architect Stewart's Office

In spite of the unsettled labor conditions in San Francisco there has been no dearth of business in the office of Architect Joseph L. Stewart, Claus Spreckels building, San Francisco. Counting work which Mr. Stewart has under construction with that which is being designed in his drafting rooms, buildings totaling more than a million dollars in value are projected. The fact that much of Mr. Stewart's work is in the nature of commercial garages has brought his name to the fore as a specialist in this class of work.

Construction has recently been completed on a large reinforced concrete garage on Market street near Brady for Mr. Mortimer Fleishhacker at a cost of $100,000. Also work has been completed on a three-story and basement class "C" building for the Moss Glove Company on First street, below Mission, San Francisco. Mr. Stewart has under construction, and the building would have been completed by now but for the existing labor troubles, a large reinforced concrete garage on Fourth street, between Minna and Natoma, San Francisco, for Mr. Thomas McDougall. For this same owner, Mr. Stewart is now preparing working drawings for a ten-story class "B" apartment house to be erected at the corner of Francisco and Larkin streets, at an estimated cost of $650,000. There will be four apartments to a floor.

Contracts were awarded during the month for a two-story and basement garage on the north side of Turk street, west of Taylor, for the Hub Garage Company to cost $65,000, and for a two-story and basement reinforced concrete garage on the west side of Sansome street, near Pacific, San Francisco, 100x137½, for the Kittle Estate. This structure will cost $100,000. Plans have been completed by Architect Stewart for a six-story and basement reinforced concrete apartment house to be erected on the northeast corner of Leavenworth and Washington streets, San Francisco, for Dr. J. A. Simpson, at a cost of $100,000. Plans are being prepared in the same office for a high-class Colonial residence in St. Francis Wood, San Francisco, for Mr. Lee Piersol. There will be eight rooms and a sun porch. The estimated cost is $17,000.

Praise for Sacramento Architect's Work

Mr. Julius Gregory, son of Mr. and Mrs. Eugene Gregory and a native of Sacramento, who is an architect in New York city, has come into prominence lately as the designer of a novel home for Mr. Charles E. Chambers of New York, the illustrator, a description of which was given in a recent issue of the New York Herald.

The house is designed after a Norman farmhouse of generous proportions and, because of its quaintness and fine workmanship, has brought much praise to young Gregory. The work is described by the Herald as "a domestic dwelling of trenchant beauty and strength." Several illustrations of the house accompany the descriptive article.

More Licensed Architects

At a meeting of the California State Board of Architecture (Northern District) held August 2nd, the following were granted licenses to practice architecture in California:

William F. C. Bouchspies, 1701 Larkin street, San Francisco.

William W. Harper, 1645 Page street, San Francisco.

Anton Johnson, Kingsburg, Calif.

Harmon Rafael Lake, 1319 Taylor street, San Francisco.

Lewis Gerstle Mack, Hobart building, San Francisco.

Personal

Mr. W. R. B. Willcox, F. A. I. A., Washington State Chapter, was a member of the jury selected by the Kansas City Commission to judge the relative merits of a nation-wide competition for the erection of a Peace or Liberty Memorial to cost $1,500,000.

A. W. Merrill, Pacific Coast manager of the General Boilers Co., is now also representing the C. A. Dunham Co., in Southern California, directing its Los Angeles office.

Honor for Mr. Edward Glass

Mr. Edward Glass, manager of the San Francisco office of Messrs. Glass and Butner, architects, of San Francisco and Fresno, has been appointed state director of the California Department of Housing. Mr. Glass will direct the commission's activities in the investigation and preparation of measures to be introduced at the next session of the State Legislature to provide a means of state assistance for working people in the construction of homes. Provision for this work was made in the Flaherty bill passed by the last Legislature.

In addition, Mr. Glass will be in charge of the enforcement of the state housing act, which regulates hotels, tenements, lodging houses and apartments throughout the state, and will direct the commission's work in city planning.

Gold Medal for Mr. Johnson

At the architectural exhibit in connection with the recent annual convention of the American Institute of Architects held at Washington, D. C., 659 photographs from twenty-five Chapters were shown. Southern California Chapter sent its first contribution to this exhibit and it received merited praise. California residence architecture appealed strongly to the judges and Mr. Reginald Johnson of Pasadena, was awarded by unanimous verdict the gold medal in the residential class on photographs of a house for Mr. Jefferson, at Montecito, Santa Barbara. Pictures of the Jefferson residence will be shown in an early issue of The Architect and Engineer.

City Planner Entertained

Mr. Charles H. Cheney, city planning expert, was recently entertained by the San Jose City Planning Commission, and by them was conducted on a tour of the city, which included a visit to Alum Rock Park. The City Planning Commission has had under contemplation for some time a project to zone the city, and may employ Mr. Cheney to take charge of the work.

Mr. Cheney is now engaged in city planning work for Portland, Ore., but came to California to deliver a series of lectures at Stanford University as part of the community service course.

Reopens Anaheim Office

Architect M. Eugene Durfee has reopened his Anaheim office after several months' absence, during which time he practiced at Tucson, Ariz., where he designed a number of buildings. Mr. Durfee's offices are now in the Cassou building, Anaheim, where he has just let contracts for a $27,000 brick and terra cotta garage to be erected at Anaheim, and a $10,000 machine shop at Placentia.

Is Designing Many Schools

Architects George C. Sellon & Company of Sacramento, are busy on plans for a number of new school buildings in Central California. Contracts have been let the past month for a $50,000 school at Roseville. Plans have been completed for a five-room and auditorium school building at Woodbridge and for a $65,000 hollow tile grammar school at Newman. Mr. Sellon has recently been commissioned to prepare plans for a county hospital at Yreka to cost $100,000.

Fresno Architects Busy

New work in the office of Messrs. Swartz & Ryland, Rowell building, Fresno, includes a $10,000 one-story auto shop building for the Washington Union High School District, and a one-story brick and stucco five-room school house for the McKinley School District to cost $35,000.

The same architects also have plans for several high-class residences, including a $25,000 brick house for Mrs. H. C. Tupper of Fresno.

Film Exchange and Pavilion

Messrs. Barrett & Hilp, Sharon building, San Francisco, have been awarded a contract to erect a two-story and basement film exchange and dancing pavilion for Mr. Louis R. Lurie on Geary street, between Van Ness avenue and Polk street, San Francisco, from plans by Architect B. J. Joseph, Call building, San Francisco.

Addition to Sanitarium

Architect William H. Weeks, 75 Post street, San Francisco, is preparing plans for additions to the California Sanitarium at Belmont. There will be a two-story building, containing an auditorium, which will be used for a recreation center. Mr Weeks is also designing a group of high school buildings for the San Thomas High School District at Campbell.

Sacramento Hospital

Architect Sam Lightner Hyman, Foxcroft building, San Francisco, has been commissioned to prepare plans for a six-story reinforced concrete and terra cotta hospital building for Mr. S. Ginsberg and associates at Sacramento. Structure will have accommodations for two hundred patients, and will cost $750,000 or more.

Oakland Auto Factory

The Tunison Motor Company, Thayer building, Oakland, has announced through its manager, Mr. C. H. Williams, that it will start construction of a reinforced concrete plant in East Oakland within ninety days. The estimated cost is $200,000.

Will Add Two Floors

Plans have been prepared by Architect Nathaniel Blaisdell of San Francisco for an addition of two floors to the three-story class "C" loft building on First street, between Market and Mission streets, San Francisco, formerly occupied by the Hicks-Judd Company, printers and publishers. The building will be modernized and equipped with an automatic fire sprinkler system, the latter to be installed by the Independent Automatic Sprinkler Company, 712 Hearst building, San Francisco.

Brick Apartment House

Plans will be completed during the present month by Architect Smith O'Brien, Bankers Investment building, San Francisco, for a four-story class "C" brick apartment house to be erected near the corner of Geary and Larkin streets, San Francisco, at an estimated cost of $73,000. There will be sixty-seven rooms. The building is being designed in the Colonial style of architecture.

Altamont Pass Overhead Crossing

Plans have been completed by Mr. P. A. Haviland, C. E., of Oakland, for the construction of the long-delayed concrete overhead crossing in the Altamont Pass between Livermore and Tracy. Bids are to be opened by the Supervisors of Alameda county August 22d. The estimated cost is $30,000.

Hotel for Taft

Mr. Eugene K. Martin, formerly practicing architect in Berkeley, and now located in the Arlington building, Bakersfield, has prepared plans for a $100,000 three-story reinforced concrete store and hotel building at Taft, Kern county.

Insurance Office Building

Architect Maury I. Diggs, Easton building, Oakland, has been commissioned to prepare plans for an office building for the Oakland Title Insurance & Guaranty Company at Fifteenth and Franklin streets, Oakland, to cost $100,000.

Hayward Moving Picture Theater

Architect Henry H. Meyers, Kohl building, San Francisco, is preparing plans for a two-story reinforced concrete store building and moving picture theatre to be erected at Hayward, Alameda county, for Mr. Chas. W. Heyer. The improvements will cost $100,000.

Presbyterian Church

Architect Robert H. Orr, Van Nuys building, Los Angeles and San Francisco, has been commissioned to prepare plans for a Presbyterian Church at Glendale to cost $150,000. Edifice will be of brick construction.

Concrete Warehouse

Architects Schirmer-Bugbee Company have completed plans in their San Francisco office for a one-story and mezzanine floor reinforced concrete warehouse, 175x165, to be erected on Howard street, near Eighth, San Francisco, for Mr. Henry E. Bothin, for $50,000. The Oakland offices of the same firm of architects have turned out plans for an $8,000 residence in Crocker Highlands for Mr. G. W. Atkinson; a $7,000 bungalow in Piedmont for Mrs. Chas. W. Fore, and a $10,000 residence in Crocker Highlands for Dr. William H. Sargent.

Miller & Warnecke Busy

New work in the office of Architects Miller & Warnecke of Oakland includes a large tourist hotel near Paso Robles; alterations to a residence on East Nineteenth avenue, Oakland, for Mr. E. H. Kimball, and altering a frame dwelling at 663 Eleventh street, Oakland, into six apartments, for the Misses Josephine White.

Addition to Judge Shurtleff's Home

Architect A. A. Cantin of San Francisco has completed plans for additions to the country home at Menlo Park of Judge Chas. A. Shurtleff. Mr. Cantin is also preparing plans for a large bungalow to be built on the Orange Ranch at Porterville of Mr. Hills', a San Francisco business man.

$100,000 Country Estate

Plans are being prepared by Architect George A. Schastey for a fireproof country house to be erected on the estate of Mr. Herbert E. Law, nine miles south of Palo Alto. The house will be one of the show places of the Santa Clara Valley.

Los Angeles Y. W. C. A. Building

A six-story reinforced concrete building is to be erected on Figueroa street, near Tenth, Los Angeles, for the Y. W. C. A. of that city. Plans have been prepared by Architect John J. Frauenfelder, Story building, Los Angeles.

Piedmont Residence

Architect William E. Milwain, Albany building, Oakland, has prepared plans for a large two-story residence to be built on Ashmont avenue, Piedmont, for Mr. John Okell. It will cost $20,000.

Downey High School

A $200,000 high school building is to be erected at Downey, Los Angeles county, from plans by Architect John C. Austin, Baker-Detwiler building, Los Angeles.

Architect Dunn Busy

New work in the office of Architect J. F. Dunn, Phelan building, San Francisco, includes a large apartment house to cost $90,000; a three-story frame apartment house to cost $35,000 for Mr. G. Benson, and two residences of six rooms each to be erected on Twenty-seventh avenue near Geary street, San Francisco, for Mr. J. Rapheld.

Santa Rosa Building

Architect Sylvain Schnaittacher, 233 Post street, San Francisco, has plans practically completed for a five-story class "A" mercantile building to be erected at Santa Rosa for M. Rosenberg & Sons of that city. The steel for this building is being fabricated by the Central Iron Works, San Francisco.

Gilroy Hotel

Architect William H. Weeks of San Francisco has completed plans for a fifty-six room hotel at Gilroy for Mr. George Milias. Construction has been started under the superintendence of Mr. James Patterson. The building is to cost $110,000, and will be of reinforced concrete construction.

Four-Story Apartments

Architect M. V. Politeo, First National Bank building, San Francisco, will shortly award contracts for the construction of a four-story steel frame and brick apartment house on Bush street, west of Leavenworth, San Francisco, for Mr. John O. Titlow.

Pacific Grove School

A contract has been let to Mr. T. H. Dean of Pacific Grove for the general construction of a sixteen-room and auditorium reinforced concrete grammar school building at Pacific Grove, from plans by Architect A. W. Angel.

Fruit Packing Shed

Plans have been completed and contract awarded in the office of Architect Ralph P. Morrell, Stockton, for a $16,000 fruit packing shed of hollow tile for the J. A. Anderson Company of Lodi.

To Build Factory in Sacramento

The All-In-One Company has decided to erect its manufacturing plant in Sacramento instead of Los Angeles, and construction of the first unit will be started immediately.

Oakland Municipal Engineer

Mr. Wilbur F. Ball, chief engineer of the Parr Terminal Company, has been offered the appointment of municipal engineer of the city of Oakland.

Bakersfield Elks' Building

Plans are being completed by Architects Meyer & Johnson, Bankers Investment building, San Francisco, for a $250,000 lodge building for the Bakersfield Elks. The same architects have completed plans and have awarded a contract for a one-story reinforced concrete commercial garage on the east side of Taylor street, San Francisco, for the Taylor Street Investment Company.

Oakland Theater

The Fox Film Corporation has purchased property on Broadway, near Nineteenth street, Oakland, as a site for a $750,000 moving picture theater and store building. The theater will seat 2,700 persons, and the plans, in the French renaissance style of architecture, are being prepared by Architects Weeks & Day, of San Francisco, and Maury I. Diggs, associate.

Capitol Extension Plans Finished

Architects Weeks & Day, Phelan building, San Francisco, have completed plans for the capitol extension buildings to be erected in Sacramento, and bids will be advertised within a very short time. The necessary money is now available, the Legislature having authorized the sale of additional bonds to meet all requirements.

Aquarium Building

Plans are being completed in the office of Architect Lewis P. Hobart, Crocker building, San Francisco, for a reinforced concrete aquarium for the Academy of Sciences in Golden Gate Park. This structure is made possible by a legacy of $250,000 left by the late Mr. I. Steinhart. Bids for the construction of the building will be taken very shortly.

Berkeley Architect Busy

Architect James W. Plachek has recently taken figures on four new buildings, including a one-story frame store on Thirteenth avenue for Mr. Fred A. Miller to cost $7,500; residence for Dr. J. C. Johnson in Northbrae to cost $12,600, and a residence for Mr. B. J. Williams in Berkeley to cost $12,500.

San Luis Obispo Hotel

Messrs. Miller & Warnecke, Perry building, Oakland, are preparing plans for a two-story frame and stucco inn to be erected on the State Highway at San Luis Obispo at an approximate cost of $75,000. There will be thirty-two rooms. Mr. S. Leggett is the owner.

Hollywood Women's Club

Architects Walker & Eisen, 326 Pacific Finance building, Los Angeles, have been commissioned to prepare plans for an auditorium for the Hollywood Women's Club at Hollywood, Los Angeles county.

A Competition

A competition has been inaugurated for prizes amounting to $90 offered by Mr. Charles H. Bebb, architect of Seattle, Wash., open to all present and former students of the Department of Architecture, University of Washington.

It is proposed that a monument be erected demarking the line between Pierce and King counties on the Pacific Highway. The through highways of the country are becoming of more importance in both commercial and pleasure activities of the country. This is attested by the very greatly increased appropriations made through federal aid and state contributions; amounts unprecedented for road building.

The width of the road will be as specified for the ideal road by the Goodyear Rubber Company, including walk ways, the elimination of light and telegraph poles, etc. The monument should be of permanent construction and should give adequate demarkation through its silhouette and mass as well as by its attractiveness in detail. Whether it shall span the road, be an isolated tower or pylon, is left entirely to the judgment of the competitor. The competitor can use his discretion in matters of cost as no limitation of cost will be placed, although the construction must naturally be within reason. The monument must likewise be considered in its effectiveness from point of view of travel by night, as it is of equal importance with travel by day. The competitor is permitted to use a reasonable amount of property on either side of the monument for parking space, comfort stations, seats and fountains, not, however, to exceed 50 feet in any direction from the center of the monument. Proper planting of trees and shrubs will be considered as having importance in the decision and a small keeper's lodge must be a part of the group or constructed within the monument itself. The drawings are to be made on Whatman's double elephant paper and mounted. The elevations shall be taken on a plane at right angles to the main axis of the road and shall be drawn at ¼″ scale. A plan at ⅛″ scale and section. All to be upon one sheet. First prize $50, second prize $25, third prize $15.

The complete drawings shall be in Monday morning at 10 a. m. October 12th, delivered to 710 Hoge building, Seattle. No project will receive consideration unless an esquisse has been previously handed in.

The drawings will be judged and the award made October 22nd.

The jury will be composed of a county commissioner, state highway commissioner, county engineer, or their representatives, and two architects.

CARL F. GOULD,
Head of Department of Architecture,
University of Washington.

Could Not Keep His Stone Houses

Mr. W. D. Hunter, an architect, bought a tract of land in the picturesque section of New Rochelle, N. Y., known as Rochelle Heights. He built himself a fine stone and stucco house, which he occupied for a year, when he was induced to sell it. Then he built himself a second home, which met the same fate. Then he built six detached houses on the plot, as an investment, one of which he occupies while he is building himself a third home. This, he declares, will not be sold on any terms. The ground is a rocky ledge and the foundations had to be blasted out. With the stone blasted from the foundation Mr. Hunter built the superstructure of his new home. By a curious freak of nature the stone taken from the foundation presented a most unusual appearance. It showed a variety of formation and coloring ranging from a resemblance to pink granite shot through with streaks of jet, to portions having the appearance of green and white marble. This material, in company with some seventeen varieties of brick, with color introduced in the stucco walls, composed a harmony of tone as rich in effect as it is unusual in appearance. Incidentally, the masonry work is, according to the builder, the finest in Westchester county. It is laid up in the style as Roman mosaic, and the builder not only selected every stone, which was cut to fit its particular place, but also stood by to see it was put in position.—Stone.

Union High School Planned

The Sequoia Union High School has purchased the 40-acre tract of the late Architect Albert Pissis in Redwood City as a site for a new union high school building. The district will hold a bond election to vote $300,000 for a new building. No architect has been selected as yet, although preliminary plans have been made by several, including Mr. W. H. Toepke, 942 Market street, San Francisco.

Letterman Hospital to Be Rebuilt

It is announced that reconstruction of Letterman General Hospital at the Presidio, San Francisco, will be started immediately. Colonel James M. Kennedy, commanding officer of the hospital, is authority for the statement. A repair shop costing $80,000 will first be constructed following which work will be commenced on a group of concrete wards, mess halls, auditorium, chapel and post exchange.

Architectural Drafting Course

A special opportunity for a young man desiring to take an architectural drafting course—a $110 paid up I. C. S. course which can be bought for $50. For information write to W. Goldbey, 1505 Gough street, San Francisco.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Franklin K. Lane

He left no will and no estate.—New York Tribune news item.

We probably should not have been so quickened to notice editorially the death of the former Secretary of the Interior had it not been for the laconic sentence quoted above, which is the end of probably the last news item Franklin K. Lane will ever get. Publicity rushes back for news of the living. Yet we cannot let this last word of his newspaper epitaph go by without comment. As Secretary of the Interior, Lane was ipso facto Secretary of Mines, and many of us have come in personal contact with him. We know that he left an estate—a legacy to the American people beyond the ability of accountants to evaluate. He left the memory and the inspiration of a high soul, a clean life, of a great ideal of public service, of a career devoted to humanity, which great things so occupied him that he never found time for the accumulation of cash. We know that he left a will—a will to live intrepidly and without currying favor, and to die serenely, awaiting the orders of a Destiny which he frankly recognized was beyond his comprehension. "I accept," was the creed he dictated on his deathbed.

To those who place, as the great objective, business, commerce, the accumulation of lands and bonds—to the greatest commercial country in the world—such an estate, such a legacy as he bequeathed to the world, is priceless. It is not an isolated case, and reveals the deep-set foundation of the nation, on which the busy superstructure of bartering, toil and hubbub, and the great constructive work of industry, is reared.

During the war, a member of the War Cabinet whose entire record was that of a money-getter, once remarked to Secretary Lane in scorn, "Queer that these doctors, experts, and scientists who are so busy around here don't seem to be able to make any money." "Did it ever occur to you," rejoined Secretary Lane, with finer scorn, "that there were people with other aims and ambitions than to make money?"

It is said of estates that man cannot take them with him when he passes into the Shadows which Franklin K. Lane entered at Rochester. But the great estate he left was not of that kind; he takes it with him wherever he goes—and he leaves it all to the country.—Editorial in Engineering and Mining Journal.

San Francisco Chapter, American Society of Engineers

We see, almost daily, something in the papers about Mexico, and now the San Francisco Chapter is to be given an opportunity to hear about our neighboring country in a talk by Capt. A. J. Capron at the August meeting. His subject will be: "Mexico—Past, Present and Future." Capt. Capron, Corps of Engineers, U. S. A., was stationed on the border during the late war. Previous to that he had been obtaining intimate knowledge of Mexico for the last thirty years and is well qualified to speak on the above subject.

The July dinner of the Chapter was well attended. Several members gave short talks which were greatly appreciated. It is the impression that engineers are not public speakers, but those who attended the last dinner were of the opinion that such is not the case. Mr. H. T. Cory, consulting civil engineer, who proved his ability in turning the great flood of the Colorado river from the Imperial Valley and who has since been retained on several similar reclamation problems, gave a most interesting talk regarding the important problems of economics which confront the world today. Mr. Cory has just returned from Egypt where he has been studying the problem of diverting the waters of the Nile.

Mr. H. M. Wolflin, superintendent of safety of the State Industrial Accident Commission, discussed the value of engineering services in carrying out the work of that commission.

Engineer Lectures

Mr. J. J. Rosedale, construction engineer of the California Industrial Accident Commission of the State of California, recently gave an illustrated lecture on "Preventing Accidents in California," at the hall of California Council, No. 530, National Union, in the Native Sons' building, San Francisco.

POSITION WANTED—Structural steel draftsman, 10 years' experience detail and design, mill and office buildings. Ottomar T. Illerich, 814 Paloma Ave., Oakland, Calif.

To What Extent Should Engineers and Engineering Societies Enter Politics?

The Safety Valve Club of the Chicago Chapter, American Association of Engineers has a two-fold purpose—that implied by its name and that of training engineers in public speaking. The second phase is more than an incident of the first: it is an object in itself.

Peculiarly appropriate was the subject of the engineer and politics—debated at the July 15 meeting of the club. By one side it was contended that the American Association should enter politics actively—first to elect public officers and to secure legislative action on the basis of those virtues and merits which are apparent to good citizens in general or to engineers in particular; second to further legislation necessary to the carrying out of desirable engineering work and to secure legislation for the direct benefit of engineers, where such is justified and needed; and third to raise the political status of the association so that its voice may be heard most effectively at whatever future times it may be desirable for it to speak.

On the negative of this question it was argued that while the individual engineer should participate actively in politics, the engineering society should not do so; that the cross-section of a politician shows him to have a profession or trade whose ideals are diametrically opposed to those of the engineer, and instead of the engineer uplifting politics, politics would drag the engineer down; that for the American Association to go into politics would mean that its ideals would have to be changed, and that this would change the entire organization so that instead of being an association to benefit engineers, it would become a political body.

In addition to the discussion of politics it was pointed out that to the engineer's notorious lack of ability to express himself before an audience, is primarily chargeable his equally notorious lack of ability to sell his services.—Engineering and Contracting.

"Open Shop" Defined and Commented Upon by Committee of Engineering Council

The Committee on Elimination of Waste in Industry in its recent report says: "Remarkable and very favorable results have been secured in labor relations and in improvement of efficiency simply by establishing frank and open conferences and free interchange of opinions, usually in genuine open shops (shops in which no prejudice or discrimination is allowed to exist either for or against men who do or do not belong to labor organizations) and sometimes by collective bargaining and dealing with a shop committee to which is delegated all responsibility for keeping the men to agreements fairly made between management and employees."

Pledge Viaduct Support

A resolution has been passed by the San Francisco Chapter, A. S. E., endorsing the San Francisco-Oakland viaduct. A committee was appointed to assist the Motor Car Dealers' Association in its work in promoting the undertaking. This committee is composed of Messrs. A. J. Capron, E. E. Carpenter, G. E. Whittle and R. E. Dodge.

Why Modern Homes Have no Place for Pictures

(Concluded from Page 103)

The modern idea of a home is a place in which to live and it is built for the health, comfort and convenience of its occupants. The ancient idea of a home was a shelter from the elements and a refuge from marauding men and beasts, and it was built primarily for the protection of the occupants. Health, comfort and convenience were given little or no consideration. Dreary spaces in the massive walls were broken with few openings, and these no larger than necessary to provide convenient lookouts. Great tapestries and huge pictures were devised to cover the waste of walls. But eternal gloom and mold were everywhere within.

It is most amazing, when we think of it, how tenanciously these primeval ideas clung to the habitations of men. The modern home is truly modern as gauged by the short period since home building began to break away from century old traditions. But it has come to stay. Health, comfort and convenience are the first considerations in the modern home.

Dreary wall spaces have disappeared and likewise the mold and dinginess and darkness. Sunshine and fresh air have free admittance. Artists may lament that large canvases are no longer in demand, but the home is still an abiding place for art, even though it has ceased to be an art gallery.—Southwest Builder and Contractor.

The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

Apprenticeship Problem in Building Trades

THINNING of the ranks of certain crafts in the building trades and lack of apprentices to recruit them has been giving contractors throughout the country much concern. Practically all organizations of building employers have taken cognizance of it. Discussion of the matter of increasing the number of apprentices in these trades has not, however, evolved any plan. There is general agreement that regulations for employment of apprentices should be more liberal and that contractors should insist that each job and each construction organization should have its full quota of apprentices. But there is no indication of the crafts being moved by any representations of employers. The crafts insist that practically continuous employment be provided for apprentices, which is a most difficult thing for employers to arrange, and also upon the observance of all other regulations.

As now enforced by building trades crafts the apprenticeship system is a potent means of regulating the supply of labor and enabling them to impose and maintain restrictions that are detrimental to the building industry. Such a policy must inevitably have its reaction. Ranks of the skilled craftsmen must and will be filled in some manner. If the crafts themselves do not see to it some other agency will be provided. At this time the trade school appears to furnish the most promising solution of the problem. Writing in The Bulletin of the Associated General Contractors of America of the trade school experiment at Newark, N. J., Mr. E. M. Waldron, head of a big construction company of that city, says:

I am very much interested in the subject of apprenticeship. Some two years ago, as a member of the board of education of this city, I laid before my colleagues a program which included the building of a trade school. This trade school is nearly completed and I hope, will be in full swing when school opens in September.

I have felt for some time that our educators attempted to train their pupils along lines that in after life were of no value to them. The bookkeeper, clerk and stenographer have become a drug on the market, while the children who were mentally and physically fit to become tradesmen had no opportunity of developing their talents during their school life.

The building business has ceased to be a trade; it is now a profession, and if the boy of today is to be the builder of tomorrow, then he must be fitted for this work along special lines.

With my colleagues in the board, I attempted to intensify trade and vocational education. I am hopeful that a year from now, the good results will be apparent to everyone.

It is true there may be some obstacles to practical training in some crafts; but far more serious obstacles have been easily overcome. Trade schools, such as contemplated at Newark, N. J., may be made most attractive to young men, because they can teach something besides the trade itself. Moreover, this training can be obtained in less time than is now exacted of an apprentice to learn a trade. Long periods of apprenticeship are distasteful to youth of the present day. An immediate job is more important to them than future prospects. Wages for unskilled employment have for a number of years been so high as to offset in the minds of the less ambitious the higher wages of skilled trades which must be reached by an apprenticeship. As long as this situation prevails there is little hope of the apprenticeship system supplying the demands for skilled labor. Some shorter cut—such as may be provided through trade schools—will have to be established.—Southwest Builder and Contractor.

Contractors Should Have This Bulletin

Smith Booth Usher Company of Los Angeles and San Francisco have made a radical departure from past trade customs by sending out an illustrated price stock bulletin, which shows in plain figures the net market price of every item carried in their immense stock of machinery, supplies, pipe and fittings.

This bulletin is making a tremendous appeal to the trade in general. It enables the buyer to figure exactly on the cost of prospective equipment, as the prices are not hidden by a mass of discounts that open the way to mistakes and disputes.

It has been their endeavor to mail a copy to every name on their mailing list, and they hope that those of their friends who may not have received this bulletin, will advise them of the fact.

Can Claim Depreciation on Building Life Expectancy

According to correspondence between the Real Estate Board of New York and the Internal Revenue Bureau, Treasury Department, depreciation can be claimed strictly on the expectancy of life of buildings in figuring income taxes.

Why It Costs Less to Build Now

WHEN the argument is made that it costs considerably less now than a year ago to erect a building, writes Mr. Richard C. Ferge in the Builders' Bulletin of the Master Builders' Association of Wisconsin, the actual proof necessary to substantiate such argument is not always immediately available. This fact has prompted me to prepare a list of the present cost of some of the principal building materials and of the present rate of wages for carpenters and masons and to contrast the same with prices and rates which prevailed a year ago, when costs were at the highest peak.

In some instances the cost of material for dwellings and other buildings has gone down more than 50 per cent.

Some of the prices and rates noted may vary more or less in different localities, but that fact, if so, is not very essential. The principal fact remains, and it cannot be disputed, that building costs have been greatly reduced, fully in line or more so than the reduction in the cost of foodstuffs and other commodities.

In discussing building costs and conditions with a client the contractor should drive home to him the facts shown in the foregoing table. Now is the time to build. Houses are scarce and rents bring a good return upon the investment. Some of the manufacturing lines are working with reduced forces, we all know that, but the building trade is the foundation upon which all other activities depend and if that trade is put to work as it should be it will be only a short time when all other industries will revive.

WHAT $250 BOUGHT IN 1920 AND WHAT THE SAME AMOUNT WILL BUY NOW

1920		1921	
1000 ft. Clear Maple Flooring	$250.00	1000 ft. Clear Maple Flooring	$100.00
		1000 ft. 2x10" Joists	39.00
		1000 ft. 2x4" Studs	39.00
		1000 ft. 1x6" D. & M.	37.00
		5000 Shingles	25.00
		6 Rolls Bldg. Paper	10.00
	$250.00		$250.00
1920		**1921**	
50 bbls. Cement	$250.00	50 bbls. Cement	$135.00
		5000 Brick	72.50
		10 yds. Sand	25.00
		10 bbls. Lime	17.50
	$250.00		$250.00
1920		**1921**	
200 hrs. Mason Labor	$250.00	250 hrs. Mason Labor	$250.00
200 hrs. Carpenter Labor	$250.00	312½ hrs. Carpenter Labor	250.00

Read Something Cheerful!

Here are a few lines from C. P. Hammerstein, secretary of the Associated Building Contractors of Evansville, Indiana:

"Through excellent co-operative effort on the part of the Associated Building Contractors an arbitration board consisting of prominent citizens was appointed to settle the wage dispute. The result was a general reduction of fourteen per cent in all crafts. Mr. Harry Veatch, chairman of the executive committee, representing all crafts, brought about a most encouraging situation and gave the building public a desire to build.

"Residential building is climbing steadily all over the city. The largest theater in the state, the Victory Theater, has just recently been opened with another theater of the same class, The Chadick, a unique edifice, under construction. School buildings, garages, hospitals and industrial buildings are experiencing similar activities. With the request for figures and plans now in the architects' and contractors' offices, the prospects for the fall are exceedingly bright.

"Materials are being sold at rational prices with our brick yards delivering the best brick obtainable at the best rates in the country. Painters, electricians, iron workers, hod carriers and laborers are working under the American Plan with the other crafts laboring energetically under the fourteen per cent reduction basis."—The American Contractor.

New Shingle Law Unpopular

The housing act passed by the last legislature in California may be forced to a referendum in the general election in November. The act prohibits the use of wooden shingles on roofs of dwellings in all incorporated cities and towns, and there is very strenuous opposition to this provision. Petitions now are being circulated and if a sufficient number of signers are had the law will go to a popular vote.

Wasting Water—The Plumber's Opportunity

(From Domestic Engineering)

IN MANY cities a vast amount of pumped water is wasted annually through leakage in defective faucets, pipes, flush ball cocks, valves, pump packing, etc., as well as through wanton carelessness.

In Chicago, according to the report of the Bureau of Public Efficiency, 60 per cent of the water pumped is lost through waste or leakage, and much of this waste can be traced to defective plumbing fixtures, etc. The report estimates that the annual cost of pumping wasted water in Chicago (involving labor and fuel) is about $500,000.

An Indiana city, with a population of 100,000, was recently using 4,000,000 gallons of water per day. Even this supply was inadequate, and the city council was about to spend $1,000,000 in extending the scope of the city's water plant. This project would have been put through by the council, but the wide-awake master plumbers stepped forward and started something. They contended that the present supply was entirely adequate, and all that was necessary to relieve the water shortage was to curb the useless waste of water through the installation of meters and the overhauling of leaky plumbing systems.

The annual waste of water represented a great and unnecessary wastage in power used for pumping water. Hence for patriotic reasons, as well as to effect a saving to themselves, house owners were urged to have defective plumbing overhauled and remodeled.

The campaign inaugurated by the master plumbers aroused the public to a keen realization of the high cost of water waste.

Preventive measures were urged. Finally the city council passed a water meter ordinance, which required that meters be installed in all buildings, including private dwellings and factories, at a total cost of $35,000.

When property owners realized that all water service would be metered, and that a waste of water would increase the water bills, they hastened to have all leaky plumbing fixtures overhauled and repaired, and the water supply proved to be abundant.

The local plumbing craft found a profitable source of business in this work of installing meters and overhauling defective plumbing systems.

The plumbing contractors in every city which maintains metered service can launch a campaign for the conservation of the local water supply.

They can show that not only is the waste of water costly to the house owner, but that the Fuel Administration deplores the annual waste of hundreds of thousands of tons of coal, which are consumed in furnishing power to pump water that goes to waste through leaky plumbing fixtures in many cities throughout the country.

Here is an unusual opportunity for plumbing contractors in every city with metered water service to actually save money for house owners, and to conserve coal for the Government—coal which is now being used to pump millions of gallons of wasted water. Here is likewise an excellent opportunity for the plumber to secure remunerative business for himself in repairing leaky and defective plumbing fixtures.

To the house owners, who must be shown that leakage in the plumbing system is costly, the contractor can present some significant facts from the 1917 report of the Chicago Bureau of Public Efficiency. In emphasizing the importance of plumbing in waste control the report says:

"Keeping plumbing tight and shutting off the water when it is not in use are the important factors in effecting waste control. If consumers insist upon wasting water, either wilfully or by permitting their plumbing to remain continuously out of repair or by installing cheap and wasteful fixtures, they should be required to pay for what they waste.

"During 1916 it cost more than $1,000,000 just to pump water, which is often regarded as free. It takes as much labor, coal, other supplies and equipment to pump water into the sewers or into the ground as it does to furnish it for a useful purpose. It is now costing about $500,000 a year to pump water, which is later wasted or which leaks away. In 1917, 190,000 tons of coal, valued at $450,000, were consumed in the Chicago pumping stations. One-half of this amount was used to pump water that was wasted. In view of the problems now involved in mining and transporting coal and of the resulting need for conserving its use, the necessity for preventing water waste, and hence fuel waste, is becoming more and more urgent."

The report points out that the inadequacy of the water supply in large cities is to be attributed to the vast amount of water wasted through leakage and waste, rather than the lack of facilities for pumping the water.

"The average amount of water pumped daily in Chicago during 1916 was 645,000,000 gallons," says the report. "In a general way, it is known that only about 40 per cent of the water pumped in Chicago is used in the sense that it is consumed for some purpose for which water is necessary or has a real value, and that the remaining 60 per cent is lost in one way or another through waste and leakage. Part of this loss

occurs in the course of the delivery of the water from the pumping stations to the premises of the consumers and results from leaks in pumps, distribution mains, and service pipes; part of it occurs after the water is delivered to the consumers' premises and is occasioned by leaky pipes and plumbing fixtures and by willful waste.

"Since the total daily pumpage of 1916 reached 259 gallons per capita, it must be plain that the preventable water waste and leakage in Chicago amounted to 134 gallons per capita per day, or more than half the total pumpage.

"A daily per capita consumption of 134 gallons is equivalent to 330,000,000 gallons per day."

The part which bad plumbing, etc., plays in the vast amount of water wastage in Chicago is set forth in the accompanying tabulated facts:

I. Water lost in delivery through:
1. Pump slippage.
2. Leaks in the distribution system.
   (a) Breaks in mains.
   (b) Leaks in pipe joints, due to defective calking, settlement of ground, interference by other excavations, or electrolysis.
   (c) Leaks in mains due to small cracks and other imperfections and to the effect of electrolysis.
   (d) Blown-out and leaky hydrants and small leaks around valve stems.
   (f) Worn-out or defective service pipes, many of which have been installed but never used.
   (g) Leaks around defective service and curb cocks.
   (h) Service pipes abandoned without curb ends being properly closed.

II. Water lost on premises through:
1. Leaky service pipes on premises.
2. Leaky plumbing pipes often due to careless or defective work.
3. Leaky plumbing fixtures.
   (a) Leaky faucets.
   (b) Leaky water closets—ball and stop.
   (c) Water closets run continuously—intentionally.
   (d) Old-fashioned hopper closet.
   (e) Frozen service pipes or plumbing.
4. The open faucet.
5. Leaks in tanks.
6. Leaks in automatic sprinkler systems.
7. Leaks in hydraulic elevators.

As a plumbing contractor, you must realize that your city and its house-owning citizens must be shown. You must demonstrate that bad plumbing is a costly article.

Let Highway Contracts This Fall, Says Hoover

HON. HERBERT HOOVER, Secretary of Commerce, has written the governors of the several states, suggesting that greater economy and more evenly balanced employment would result from letting highway contracts in the fall instead of in the spring. A committee of engineers representing engineering societies, general contractors and representatives of state highway departments, supports the suggestion. The memorandum on the advisability of letting highway contracts in the fall, sent to each governor by Secretary Hoover, is printed in full herewith. With this memorandum went the following letter:

July 26, 1921.

My Dear Governor:

In making a systematic study as to what we can all do to promote employment and to thus assist in tiding over the very severe situation that we are now in, this department has had its attention called to the bearing of the period at which contracts are currently let for the building of public roads upon this problem. In order that there should be no question as to the correctness of the conclusions that had been reached, I summoned a committee comprising representatives of the great engineering societies who have prepared for me the enclosed opinion.

The conclusions of this inquiry are in a word that there would be additional economy in construction if the contracts for the roads were let in the fall instead of in the winter and spring; that contracts let at this time would enable considerable employment over the winter in the manufacture of material and equipment and in the placing of material ready for construction early in the spring. It would enable contractors to give employment to some of their staffs through the winter instead of imposing it at a higher rate upon the short summer construction season. It would relieve pressure on labor during the period of larger demand for agricultural help and would, indeed, expedite the completion of road building.

The criticism that we are in a period of falling prices and possibly of railroad rates, and that contracts let this fall might be at higher figures than would prove necessary later in the season may be answered by making provisional contracts so that any such difference would accrue to the state.

This method has been partially adopted in a few states and you will, of course understand that my only desire is to offer a suggestion that by co-operative action might lead to some reduction of unemployment.

I hope you will find the matter worthy of consideration and would be glad to have you advise me of your views upon it.

Yours faithfully, HERBERT HOOVER.

PLANT OF THE MOORE SHIPBUILDING COMPANY, OAKLAND

Moore Shipbuilding Company Enters Construction Field

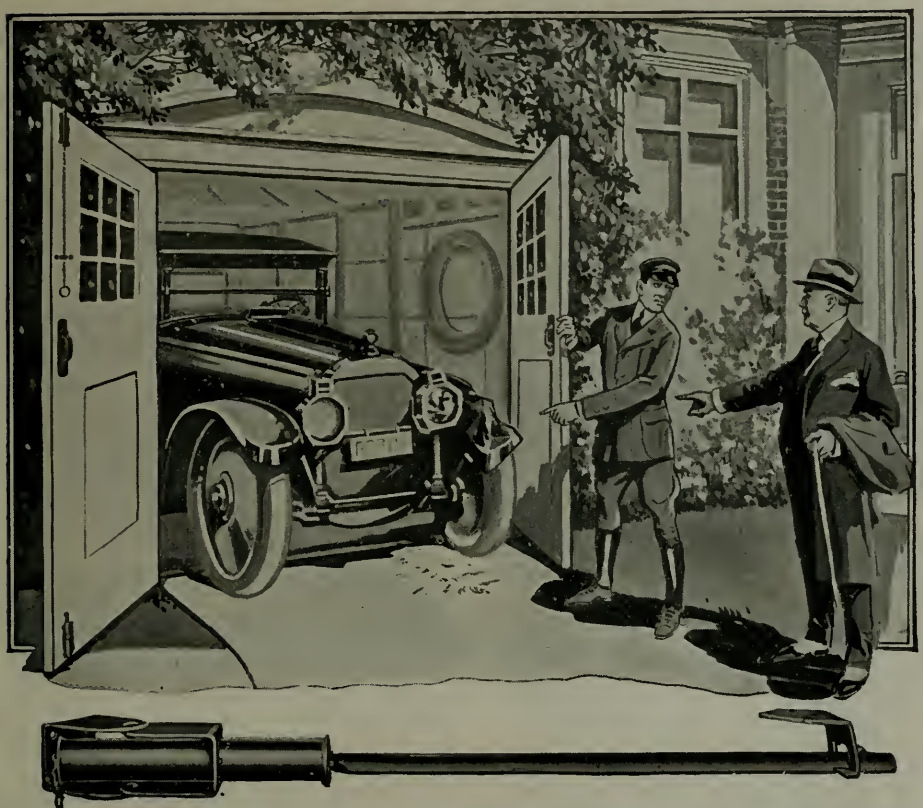
ANOTHER ship building concern has entered the building construction field and must be reckoned with when structural steel work is in the market for figures. The Moore Shipbuilding Company will bid on bridges and buildings where steel is required, both for public and private work. The big Oakland plant has ample facilities for handling steel contracts both large and small, and its advent into the building field is likely to provide some keen competition, the benefits of which will be enjoyed by San Francisco architects and owners.

A brief history of the Moore shipyard may be of interest at this time. It is an accepted fact that out of the greatest shipbuilding program ever completed in an American shipyard the Moore Company has emerged as the largest repairing plant on the Pacific Coast. A vision of the future, born in the midst of record-breaking accomplishments, has proved the wisdom of its conception by giving to the Oakland plant a permanency at a time when the shipyards of other centers are being closed and dismanteled. With the close of the story of war-time work, of the unusual demand for bottoms, of expansion and achievement, there has opened another that is written with all of the initiative, foresight and energy of the first. Oakland and San Francisco bay are to remain the center of shipbuilding and ship repairing activities of the Pacific, for here are all the facilities, ready at hand and busily engaged in making fit the carriers of the western ocean.

Time and again the shipbuilding accomplishments of the Moore Shipbuilding Company brought to Oakland and the Pacific Coast the attention of the world. Scarcely a week passed in those days when effort was being strained to furnish the needed carriers for war duty without the shattering of record and tradition.

At the beginning of the war the Moore Shipbuilding Company had just begun the construction of new vessels. It was already a shipbuilding plant, and had there been no war would have built a number of vessels for the government and for private owners. Once the world struggle started the entire energies of the company were focused to turning out the vessels which played so large a part, not only in shortening the conflict, but in the victory. The call came for a "bridge of ships" and every man in the plant responded.

When this call came the Moore plant was small and without organization for so stupendous a program. Yet the authorities at Washington, D. C., had confidence in the concern and placed with it contracts for many millions of dollars in vessels. The manner in which this confidence was justified is shown in the record of achievement. The plant expanded and developed, organized armies of workers, added building ways, shops and foundries and brought in more steel than industrial Oakland had ever seen.



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MR. ROBERT S. MOORE

There came the time when 13,000 men were employed and when the weekly payroll was $275,000. The one slip grew to ten building ways. New methods were devised, clock-work organization was put into effect and the work of the great shipyard co-ordinated in a manner that made it a pattern for both coasts. The genius at work in all of this was Mr. Robert S. Moore, the same man who made the plant a shipyard in the days before the war and who could see, even in the midst of an epoch-making construction period, the need to make ready with drydocks and marine railways for the labors that were to come with peace.

The first steel ocean-going ship constructed in Oakland was built at the Moore yard and because Mr. Robert S. Moore put the plant in shape to handle the contract which his efforts obtained. Likewise he got the first foreign contracts for Oakland. These were records of an earlier day—peace-time accomplishments that show that the company was well launched before the call of war. He also obtained the contracts for the forty-eight vessels built for the United States Shipping Board.

While all of this shipbuilding history was being made, and while a task of gigantic proportions was under way, Mr. Moore saw beyond the circle of a tremendous present and planned for the future. He began to prepare for the ship repairing that would come with the close of hostilities and, with his suggestion, the company expended $8,000,000 in new docks and facilities. Today no other concern on either coast is better equipped for building, repairing or overhauling vessels.

In this repairing field, in the carrying out of the peace-time vision, the company acted with the same initiative and understanding of the situation as before. It upset tradition again when it purchased the great 20,000-ton drydock from Seattle, Washington, and had it towed down, pontoon by pontoon, from the northern city. The spectacle of the little tugs pulling the huge pontoons the length of the Washington and Oregon coasts and down California to the Golden Gate was one that attracted wide attention and the deed was one that put the company in position to repair any vessel that could reach these waters through the Panama Canal. And yet Robert S. Moore's plants were not complete.

With a second drydock of 20,000 tons capacity, with three marine railways of 5,000 tons, 7,500 and 8,000 tons, the shipyard today can handle any craft from the smallest tugboat to a battleship and can conduct a large amount of repair work at once. Recently a cargo carrier was taken out of the water, painted and sent back within six hours, so that it made its return to San Pedro from this port on schedule time.

By equipping the shipyard for this labor of repairing and overhauling Robert S. Moore has kept the shipbuilding center of this western country in Oakland. After he had the organization and the work of building vessels well under way he looked back over his forty years of active shipbuilding and decided that he had earned the right to a certain relaxation. Accordingly he retired from the active management of the company to become the chairman of the board of directors. Mr. George A. Armes, an executive whose ability led to his being requisitioned by the United States Shipping Board, succeeded him as general manager and president, while Mr. Joseph A. Moore is vice-president and general superintendent.

While the shipping program that has been so important a part of Oakland's industrial life is at a close, the shipyard as a plant, which is still employing hundreds of men, remains an actuality. It has merely changed from the construction period to one of repairing and overhauling, and of supplying the building world, which is on the eve of a great revival, with steel frames for buildings of modern fire and quake-proof types.

Big Job for Judge

Frank E. Davidson, president of the Illinois Society of Architects, believes that he has a scheme which will cure all evils of the building industry. He proposes to have a federation consisting of contractors, architects, material men and the laboring men. He suggests that Judge Landis be given a salaried job as president or general manager, and sole arbitrator in the settlement of all disputes. This scheme was proposed several years ago by a contractor, and after careful consideration was finally decided not being feasible because of the differences always existing between the contractor and material man. It is the general belief, however, that some kind of an organization should be formed that would be satisfactory to all concerned in the building industry, so that united action could be taken when conditions are such as to require it. Whether it should be a federation such as Mr. Davidson suggests, or some scheme of a similar nature, is a matter to be determined. In the minds of many, it is a very remote possibility that Judge Landis would undertake to be boss of the new scheme, because his time is already so fully taken by his duties as Federal Judge, and as president of the Baseball Commission. Judge Landis has given the agreements of the building trades thorough consideration, and there is no doubt that by the time he gets through with them he will be amply qualified to occupy the position suggested by Mr. Davidson.—The Decorating & Painting Contractor.

Noted Architect Passes

Mr. Henry Lord Gay, noted architect and sculptor, died July 10 at the home of his sister, Mrs. John Johnson at Oceanside. He was 67 years of age and had been a resident of San Diego for the last twelve years. Two years ago he suffered a stroke of paralysis and was unable to continue professional work.

Mr. Gay was a native of Baltimore. He took up the study of architecture at New Haven and later went to Italy to pursue his studies, winning a royal medal for his monument of Victor Emanuel, which was later brought to the United States and presented to the University of Illinois.

He practiced architecture in Chicago for many years and also published the Building Budget, an architectural paper, in that city. He became a member of the Western Association of Architects in 1874, and a Fellow of the American Institute of Architects in 1887.

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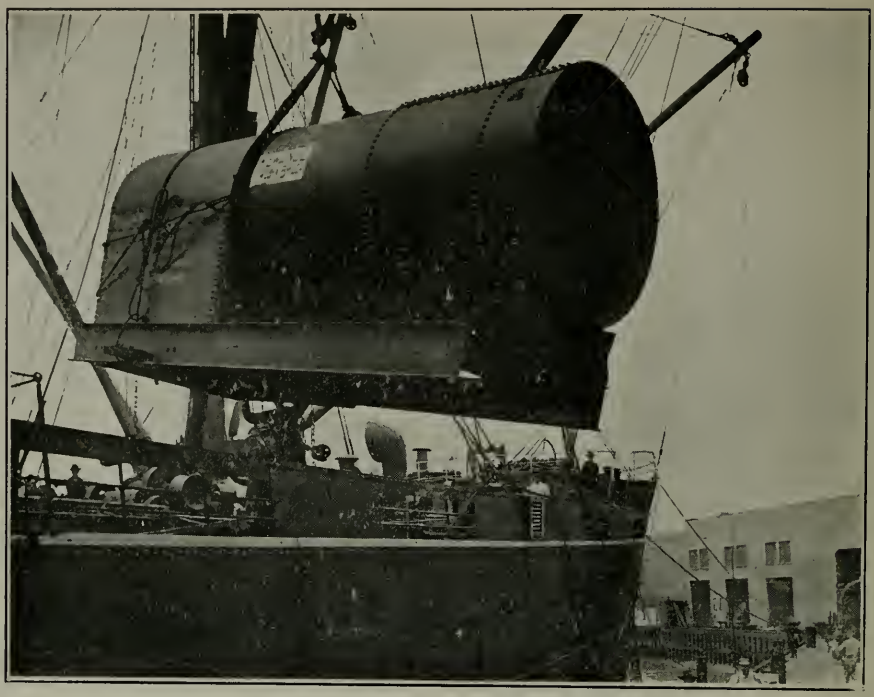

BIG SHIPMENT OF KEWANEE BOILERS FOR JAPAN

Six Kewanee 14-Ton Boilers for Japan

The accompanying picture shows an interesting shipment of six 125 horsepower Kewanee boilers, each weighing 14 tons, sold by the California Hydraulic Engineering and Supply Company of San Francisco to the George A. Fuller Company, contractors of a large office building under construction in Tokyo, Japan.

The California Hydraulic Engineering and Supply Company reports that it has recently secured a contract to furnish the Nevada Bank building, in San Francisco, with two boilers, duplicates of the Japan order, and these are now being manufactured by the Kewanee Company in their Eastern factory and will shortly be shipped to California.

Los Angeles Theaters

Architect E. J. Borgmeyer, California building, Los Angeles, has prepared plans for a $100,000 brick theater, store and office building to be erected at Vermont and Vernon avenues, for Mr. Joseph Engert.

Mr. L. A. Smith, 415 South Western avenue, Los Angeles, has prepared plans for an $80,000 brick, store and theater building to be erected at Sixtieth street and Moneta avenue, Los Angeles, for the West Coast Theaters, Incorporated.

Structural Steel Arrives

Several carloads of structural steel for the new Standard Oil office building have arrived in San Francisco and are stored in the yard of the J. G. Williams Construction Co., pending the time the foundations for that portion of the Standard Oil building, which is going ahead, are ready.

When writing to Advertisers please mention this magazine.

ARCHITECTURE *and the* CHURCH

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Architectural Jest Draws Censure

Recent alterations in the city hall in Potsdam included the reconstruction of the municipal treasury office. The work, when completed, was duly inspected by the city fathers, and caused their dignity to be considerably ruffled, says the London Chronicle.

Ornamenting one of the pillars was a gargoyle sufficiently grotesque, yet strangely familiar. Closer inspection convinced the councillors that here, caricatured in enduring stone, were the features of the municipal accountant.

In special conclave assembled the council summoned the architect to appear before them, and asked him whether or not their eyes had deceived them.

No, the gargoyle did intend to represent the accountant, but it was only a joke, said the architect. Moreover, it was only a plaster cast—presumably the artist doubted Potsdam's sense of humor—and in the event of giving offense could be destroyed with one blow of the hammer.

The blow was given. The architect received a vote of censure for trying to be funny in Potsdam.

Big Irrigation Project

Bonds amounting to $28,000,000 have been authorized by the voters of the Madera Irrigation District. The project provides for the construction of a storage reservoir, 20 miles east of Madera, across the San Joaquin Canyon, the dam to contain 1,400,000 cubic yards of concrete. The reservoir formed by the dam will extend several miles up stream. Power houses will be constructed below and at the base of the dam. It is estimated construction work will cover a period of three years.

Don't Worry About Shingles

Shingle your house with any old thing, says the Oakland Enquirer.

This is the edict that has gone forth over the state as the result of the referendum taken on the recent law passed by the California legislature that prohibited the use of wooden shingles.

Mr. Leon Gray, acting Oakland city attorney, says the new law will be held in abeyance until the next session of the legislature, pending an election on the referendum.

Somebody slipped one over on the wooden shingle manufacturers and got away with the bill, Gray says. Protests poured into Sacramento from every part of the state and the referendum carried easily.

S. F. Society of Architects

The San Francisco Society of Architects gave an informal dinner to Mr. Arthur Brown, Jr., at the University Club Tuesday evening, August 16th. Election of officers followed the dinner, the report of the nominating committee being as follows: President, Clarence R. Ward; vice-president, Herman Barth; secretary-treasurer, Chas. K. Sumner; directors, Bernard Maybeck and W. C. Hays.

A Built-in Phonograph

A unique variation of the built-in features usually found in the colonnade separating the dining and living rooms is suggested by John D. Budde, contractor, Tilden, Neb. On the dining-room side he builds two china cabinets. On one side of the entrance in the living-room he builds in a writing desk, with a bookcase below; and on the other side of the entrance he places a built-in phonograph with a case below for records.—National Builder.

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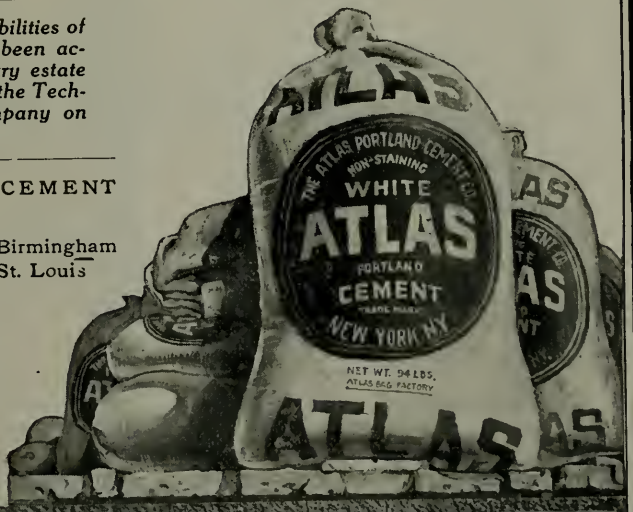


ATLAS-WHITE PORTLAND CEMENT

Portland Cement in the First half of 1921

The approximate production and shipments of finished Portland cement in the United States, by months, and the stocks at mills at the end of each month, during the first half of 1921 are shown in the accompanying table:

Finished Portland cement, production, shipments, and stocks, by months in first half of 1921:

Month	Production (Barrels)	Shipments (Barrels)	Stocks at end of mo. (Barrels)
Jan.	4,098,000	2,539,000	10,300,000
Feb.	4,379,000	3,331,000	11,400,000
March ..	6,763,000	6,221,000	12,000,000
April	8,651,000	7,919,000	12,600,000
May	9,281,000	9,488,000	12,450,000
June	9,296,000	10,577,000	11,150,000
Total ..	42,468,000	40,075,000	

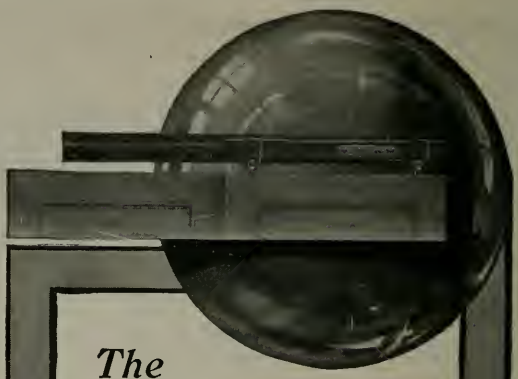
The total production for the six months ending June 30, 1921, represents about 94 per cent of the quantity made in the corresponding period of 1920 and over 42 per cent of the total production in 1920; the shipments are about 98 per cent of those of the first half of 1920; and nearly 42 per cent of those for the whole year 1920. The stocks, which amounted to more than 11,000,000 barrels, are slightly above normal, comparing with approximately 9,000,000 barrels, on June 30, 1920, and 8,941,046 barrels on December 31, 1920.

The year 1921 began with mills producing at a moderate rate and shipments considerably less than production, but month by month both production and shipments of finished cement increased at a rapid rate, shipments exceeding production in May and June. Production in June was slightly greater than in June, 1920, and also a little above the average that month during the last five years. The shipments in June of more than 10,500,000 barrels were larger than those of any preceding June.

Clinker (underground cement) produced during the first six months amounted to more than 43,500,000 barrels, more than 9,000,000 barrels of which were produced in June. This is also a new high record. Stocks of clinker are reported to be more than 4,600,000 barrels, a quantity slightly above normal.

These figures indicate that the cement industry has enjoyed relatively greater activity than many of the other large mineral industries during the first half of 1921, and that stocks of finished cement and clinker, while not excessive are ample to supply any reasonable demand.

These statistics, which were prepared under the direction of Ernest F. Burchard, manufacturers of Portland cement and to a small extent upon estimated data, and are subject to revision. It is hoped to issue similar statistics of the Portland cement industry each month in the future. —The American Contractor.



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D. E. Fryer & Co ..... Seattle, Spokane, Tacoma, Wash.; Great Falls, Mont.

New Cooling System for Theaters, Stores and Other Buildings

Engineers of the A. D. Lane Engineering and Manufacturing Co., Albany block, Oakland, have completed plans and specifications for heating, cooling and ventilating the New Wonder Store, an exclusive shop for ladies' wearing apparel, with a floor area of 20,750 square feet and class "A" construction, at Fresno. R. F. Felchlin Co. are the architects. A similar system is being successfully operated in the Kinema Theater in the same city. Mr. Lane has guaranteed to deliver with his system cold, dry air from 10 to 14 degrees lower than any air-washer on the market. The installation permits of a humidity reduction of approximately 50 per cent.

The following article in reference to the Lane system appeared in a Fresno newspaper during the month of June, 1921:

While all Fresno was sizzling last week beneath a typical San Joaquin Valley summer sun, patrons of the Kinema found the interior of this theater cool and inviting at all hours of the afternoon and evening. During the hottest weather accurate readings of officially tested thermometers within the theater showed a temperature of about 35 degrees below the street temperature. The Kinema is kept cool by one of the finest cooling systems in the country, which provides pure, dry air in all parts of the theater at a temperature of about 40 degrees below the outside .

Excellent results with any standard air-washer already installed can be obtained by using it in conjunction with Lane pre-cooling equipment.

Pacific Electric Clock Company

One of the growing concerns in San Francisco is the Pacific Electric Clock Company, 516 Wells Fargo building. Mr. Estabrook, who has been on the coast for the past twelve years, is well known to most of the school boards in California as a man who has had long experience in electric school systems.

A recent contract completed by the Pacific Electric Clock Company is in the new Bank of Italy building, where one of the most complete electric clock systems west of Chicago has been installed.

The company operates a complete factory in San Francisco, manufacturing its own devices with a working force of from fifteen to twenty expert mechanics.

Certificates to Practice

The State Board of Architecture (Southern Division) has granted certificates for the practice of architecture to the following: Messrs. W. A. Hudson, 1105 Sixth street, Santa Monica; Ernest C. Batty, with Pacific Electric Railway Co., Los Angeles; Everett H. Merrill, Burbank; M. Eugene Durfee, Cassou building, Anaheim; H. J. Knauer, 1128 Story building; George R. Postle, 631 Van Nuys building; Carroll Clark, Glendale; H. A. Kerton, 622 Metropolitan building; and Robert S. De Witt, 211 Broadway Central building, all Los Angeles.

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AN OBJECT LESSON

A Comparison of Living Costs, Then and Now

Behind a big plate-glass show-window of one of Milwaukee's department stores was displayed a few days ago a solitary sack of 100 pounds of granulated sugar, underneath which there was a card with the following inscription:

100 lb. Sugar
Cost in 1920
$22.50

A few feet away, in the same window, was an enormous assortment of groceries, in bags, cans, baskets and kegs, and in the center of it was another, but larger, card, telling the crowds who stopped to read and figure that all of the big assortment shown could now, in 1921, be purchased for $22.50—for the same amount of money that they had to pay for 100 pounds of sugar only one year ago. The items and prices on the card were as follows:

100 pounds Granulated Sugar	$7.50
6 cans Corn	.60
6 cans Peas	.90
6 cans Peaches	2.10
6 cans Apricots	1.50
6 cans Mixed Vegetables	.58
6 cans Tomatoes	.72
3 pounds Creamery Butter	1.11
3 dozen Fresh Eggs	1.12
3 pounds Uncolored Japan Tea	1.10
5 pounds Peaberry Coffee	.90
6 pounds Cocoa	.54
8 pounds Navy Beans	.48
20 pounds Blue Rose Rice	1.20
5 pounds Yellow Corn Meal	.15
1 pound Black Ground Pepper	.25
2 dozen Oranges	.60
1 keg Holland Herring	1.15
1921 Total Cost	$22.50

P. S.—Since the display of the above mentioned lot of "vittels," prices on most of them have gone down another peg or two, and in order to make up the full value of $22.50, a can of malt syrup, a cake of yeast and some hops should be thrown in.—June Bulletin, Master Builders Association of Wisconsin.

Long Beach Architect Busy

Architect W. Horace Austin, 221 First National Bank building, Long Beach, has close to $1,000,000 worth of work in his office.

He has just been commissioned to prepare plans for a five-story reinforced concrete class "A" department store building on Pine avenue, near Broadway, Long Beach, for the Buffum Department Store.

He has also been commissioned to prepare plans for a four-story and basement brick and reinforced concrete apartment building at Modesto, for Mr. S. J. Irwin to cost $200,000. Construction will be of concrete and brick. There will be 48 apartments, with wall beds, steam heat, hot water, elevator service, etc.

Working plans are being made by Mr. Austin for a two-story and basement brick addition to the Seaside Hospital at Long Beach to cost $200,000.

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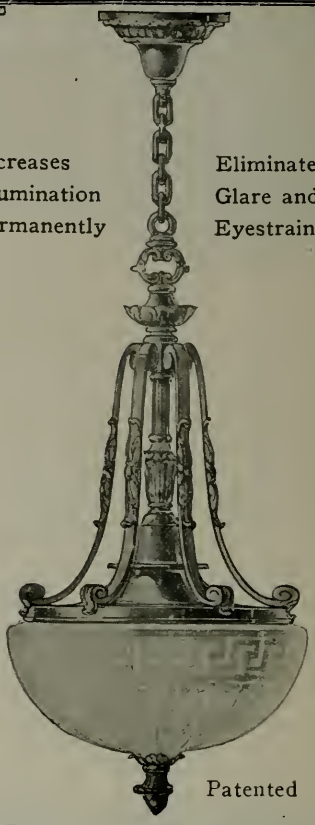

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Why Engineers Make Successful City Managers

THE qualifications required for the new profession of city manager are outlined by Chas. E. Ashburner, city manager of Norfolk, Va., in an interesting article in the current issue of the Professional Engineer, from which we quote as follows:

The growth of the city manager form of government has been phenomenal: Beginning with one city in 1908; one more in 1913; arriving at a total of 19 in December, 1914; continuing to gain year after year until now we have approximately 130 cities under this form of government in the United States and Canada. Such a tremendous growth in any profession makes it difficult, of course, to procure trained men to fill the positions that are being created so rapidly. A council or a commission, after it is elected, turns instinctively to the profession of civil engineering, believing that this profession is more nearly allied to that of city manager than any other.

The logic of this point of view is substantiated when we analyze the budget of the average American city, as it will be found in nearly every case that the largest single expenditure is in the department of public works, which fact argues on its face that the civil engineer is the logical man for the position of city manager.

There are, however, other qualifications which must be taken into consideration in selecting one to manage the affairs of a city. A city manager must have courage of his convictions and sufficient strength of character to stand firm when he knows he is right, without egotism or stubbornness. He should also have a knowledge of municipal laws and finance, together with executive ability and good business judgment.

A city manager should be able to give off-hand, at least approximately, the cost of various items in street paving, sewerage, lighting, building, and, at the same time, should know and be able to discuss matters pertaining to the financial conditions, both local and national; he should know the best methods of financing various projects; he should have sufficient knowledge of men both individually and collectively, to know whether a project for the advancement of a community would meet with sufficient approval to make it able of accomplishment. He should know when to discipline or commend employes; and be so peculiarly constituted as to inspire confidence for sincerity, and integrity among those who may not approve of him personally. He should be an indefatigable worker, and keep in touch at all times with the most advanced practices in all lines pertaining to municipal work; he should be able to

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weigh what is done in other localities by the local scale to see whether what is done in other places will fit local conditions. In other words, the city manager must be an executive.

As I said in the beginning, since most of the expenditures of a municipality are made for public improvements, first-hand engineering knowledge is most essential; otherwise a manager would be entirely dependent upon the engineering knowledge and business ability of the city engineer, who might influence the city manager in many expenditures through his personality rather than through the soundness of his engineering knowledge.

Engineers intending to enter the profession of city manager should, by all means, round themselves out in the other qualifications so essential to this profession. The successful civil engineer is the man who has ability to grasp situations and solve problems, and is, therefore, by nature of his training, in a good position to school himself in the handling of the various other duties mentioned in this article.

To be very frank, I feel that most engineers allow themselves to get strictly into engineering ruts and do not see the necessity of looking at the commercial side of engineering problems; but, if the man with engineering knowledge has the ability to grasp the matters mentioned above, with a further ability to organize his work, and to avail himself of the brains of others in lines in which he is not schooled, I feel that the civil engineer should make a success in this profession.

There is one qualification, however, that I have entirely omitted; that is, no matter how well educated, how well read, or how deep a thinker the engineer may be, he should have the ability to be "at home" with any and all of the citizens who employ him. He should have the ability to explain clearly and concisely the policies of the administration, the whys and wherefores of its various actions.

He should always be ready to look at matters that affect citizens from their point of view, as often matters are presented, which until properly explained, seem much more serious to the citizens than they really are.

To sum up the whole question, of the civil engineer as a city manager, he should have the qualifications mentioned earlier in this article, and at the same time be possessed of a sympathetic nature which would enable him to smooth out the rough places that will be found in all city administrations.

Should Industries Build Now?

Some interesting light is thrown on the building situation in a broshure recently published by the Detroit Steel Products Company which sent a questionnaire to leading architects, engineers and contractors all over the country, asking an opinion in regard to building conditions, together with a request for suggestions for inducing the timid builder to go ahead.

An expression by more than 200 architects, engineers and contractors may be summed up with the following facts in evidence:

The United States as a whole is not overbuilt.

Those whose business warrants expansion will make no mistake in building at once, for labor is plentiful and its efficiency is increasing, while material prices have already dropped considerably.

Lower labor costs and possibly a slight further drop in material prices are expected by the building public, and until some such movement is sighted, the present buyer's strike is very apt to continue.

Prices on building material will probably become stable at around 50 per cent increase over 1913 prices, but complete stabilizing of the market is not apt to occur before late fall or early in 1922. The resumption of industrial building, therefore, is apt to be very gradual.

While no section of the country appears to be overbuilt, there is a wide divergence of ideas as to what the conscientious builder should recommend. Many in Wisconsin, Michigan, Illinois, Indiana and Ohio, say they cannot advise their clients to build now. The New England and Middle Atlantic states, however, are more optimistic, while the Pacific Coast believes little is to be gained by waiting.

The conclusion seems general that industries which expect that a return to "near-normal" business will awaken an abnormal demand for their particular product should not fail to make immediate preparation to take care of this increase.

The present tendency in building seems not materially changed as compared to the first quarter of 1921. In fact, most builders reply, somewhat grimly, that there was practically no building during the first quarter and that the present tendency is "the same." The Southern States seem slightly more optimistic however, replies indicating that there is a slight upward tendency.

Among the most important items that are holding up building activity at present are listed: Labor disputes, material prices, labor costs, credits, unstabilized conditions, lack of confidence, and freight rates.

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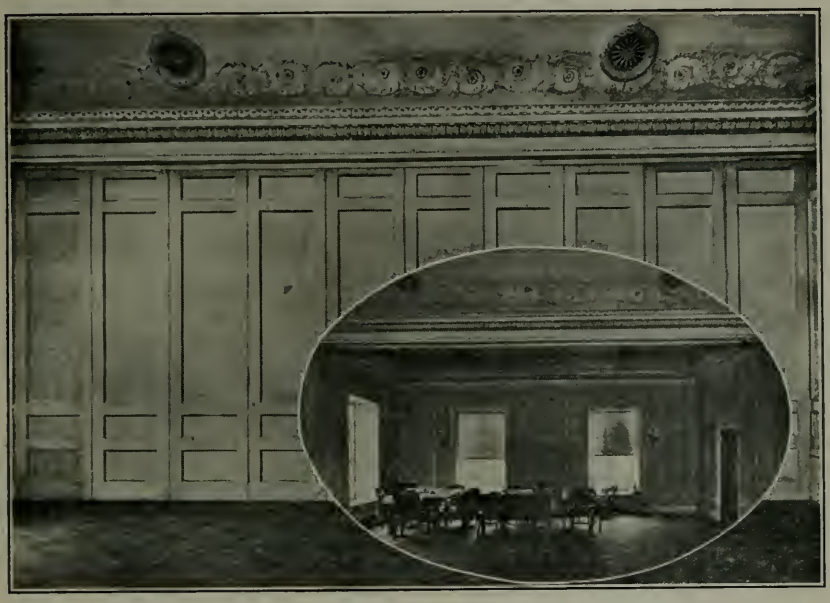

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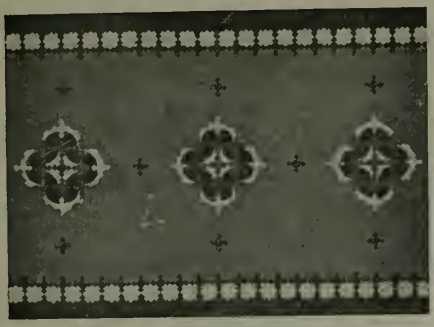

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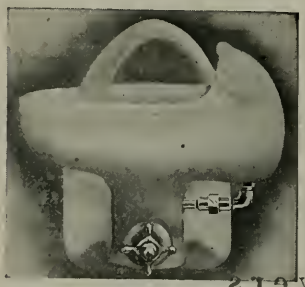

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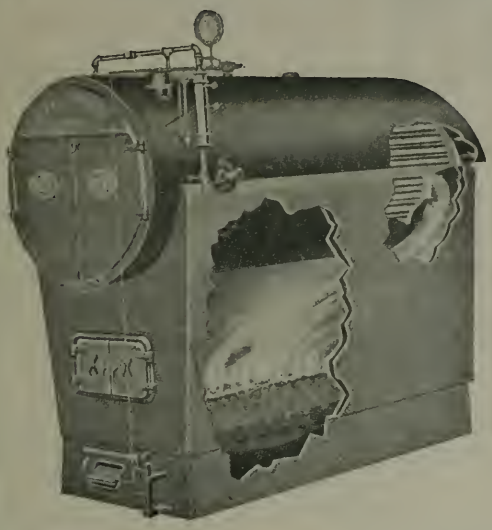

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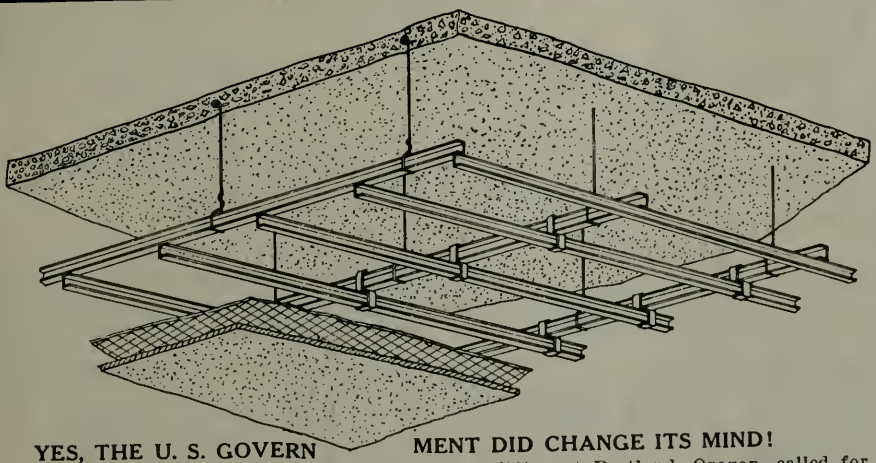

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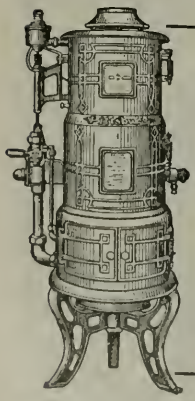

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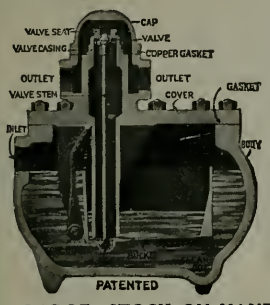

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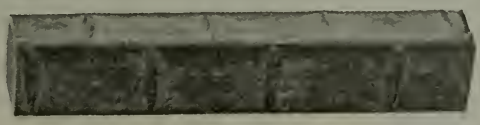

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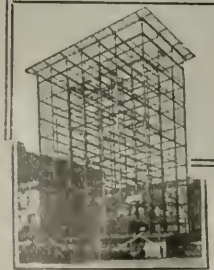

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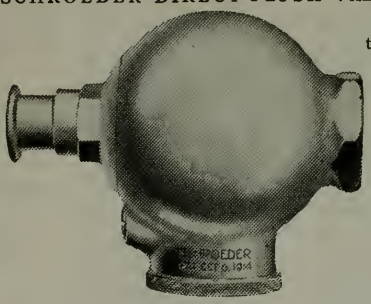

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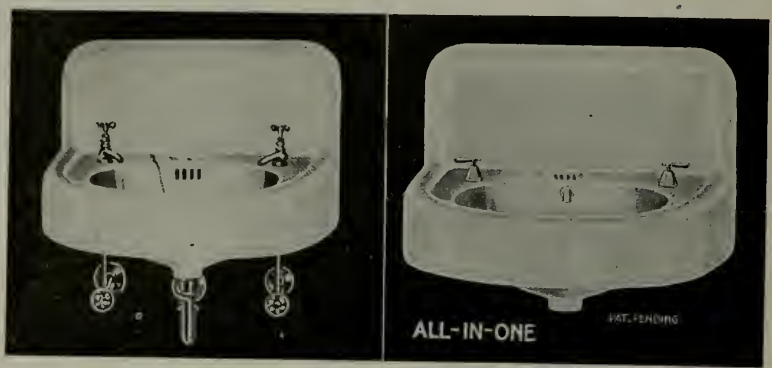

Old Style **All-in-One Lavatory**

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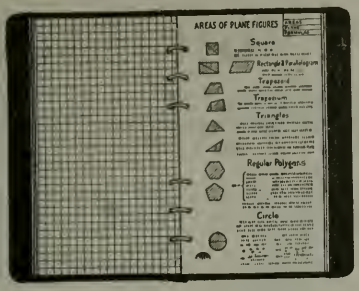

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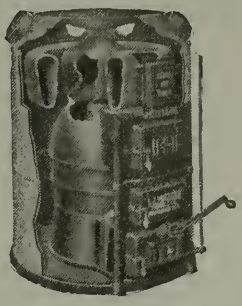

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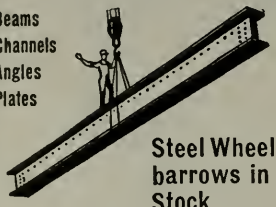

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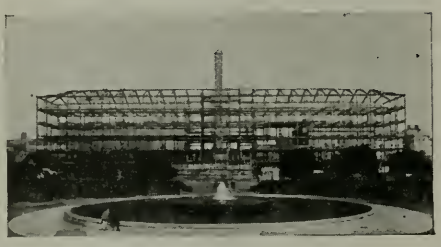

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIALS, SUPPLIES, ETC.
- Abeel-Jensen Co., Call Bldg., San Francisco.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.
- Johns-Manville Company, Post and Mason Sts., San Francisco.

CABINET MAKERS
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.
- Pacific Mfg. Co., San Francisco, Los Angeles and Oakland.
- Frank Portman, 1618 Mission St., San Francisco.

CARPETS
- John Breuner Co., 281 Geary St., San Francisco.
- D. N. & E. Walter, Mission near Second street, San Francisco.
- W. & J. Sloane, 216-228 Sutter street, San Francisco.

CASEMENT WINDOW HARDWARE
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
- Victory Manufacturing Co., Monadnock building, San Francisco.

CEMENT
- Atlas Portland Cement Co., all principal cities.
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass. James Hambley & Son, Distributors, San Francisco and Los Angeles.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Cement coating, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
- Cannon & Co., Sacramento, Cal.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Tropico Potteries, Inc., Glendale, Cal.
- United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
- Pacific Electric Clock Co., 516 Wells-Fargo Bldg., San Francisco.
- Standard Electric Time Co., 461 Market St., San Francisco.

COLD STORAGE PLANTS
- H. W. Johns-Manville Co., Post and Mason Sts., San Francisco.
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

COMPOSITION FLOORS
- "Linotol" plastic flooring, Hill, Hubbell & Co., No. 1 Drumm street, San Francisco; 410 San Fernando Bldg., Los Angeles.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- I. M. Sommer, 401 Balboa Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE HARDENER
- Gunn, Carle & Co., Inc., 444 Market street, San Francisco.

CONCRETE MIXERS
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Smith-Booth-Usher Co., San Francisco and Los Angeles.

CONCRETE REINFORCEMENT
- Edw. L. Soule Co., Rialto bldg., San Francisco.
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.
- Badt Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
- Garnett Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Larson & Co., Inc., Claus Spreckels Bldg., San Francisco.
- R. W. Littlefield, 357 12th St., Oakland.

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Fire Protection Engineers

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL—Continued
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Unit Construction Co., Phelan Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
John M. Bartlett, 357 Twelfth St., Oakland.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
Herbert Beckwith, 323 Newton Ave., Oakland.
Collman & Speidel, 546 Monadnock Bldg., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 251 Kearny street, San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 180 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Co., R., Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Del Favero & Rasori, 180 Jessie St., San Francisco.
S. S. Jackson, 351 12th St., Oakland.
Jas. L. McLaughlin, 251 Kearny street, San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Gunn, Carle & Co., Inc., 444 First street, San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.
Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Waterhouse-Wilcox Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Oregon.
Stanley Works, New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Drinking Faucet Co., 1808 Harmon St. Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom street, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
Central Electric Company, 185 Stevenson street, San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
H. S. Tittle, 766 Folsom St., San Francisco.
Spencer Electric Co., 355 12th street, Oakland.
Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Garnett Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Western Electric Safety Mfg. Co., Inc., 247 Minna street, San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom street, San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

ESTIMATOR—BUILDING AND ENGINEERING WORKS
Arthur Priddle, 185 Stevenson street, San Francisco.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FENCES—WIRE
Standard Fence Construction Co., 245 Market St., San Francisco, and 310 12th St., Oakland.

PNEUMATIC WATER PRESSURE SYSTEMS

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FILLING STATION EQUIPMENT
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE BRICK
Livermore Fire Brick Works, 604 Mission street, San Francisco.

FIRE ESCAPES
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE INSURANCE
Bankers & Shippers Insurance Co., Insurance Exchange Bldg., San Francisco.

FIRE PROOFING
American Insulex Company, Berkeley Bank Bldg., Berkeley.

FIRE-PROOF DOORS
Forderer Cornice Works, 269 Potrero avenue, San Francisco.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

FIRE SPRINKLERS—AUTOMATIC
Grinnell Company, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 712 Hearst Building, San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—DUST PROOF CEMENT
L. Sonneborn Co., United Materials Co., San Francisco agents.

FLOORS—HARDWOOD
Oak Flooring Manufacturers' Association of the United States, Ashland Block, Chicago, Ill.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Hardwood Company, 511 First street, Oakland.

FLOORS—MASTIC
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FLUSH VALVES
National Valve Company, 23-25 Minna St., San Francisco.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
S. T. Johnson Co., 1337 Mission St., San Francisco.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
Pacific Heating Company, Second and Grove streets, Oakland.

FURNITURE—BUILT-IN
Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.
W. & J. Sloane, 216 Sutter street, San Francisco.

GARAGE HARDWARE
The Stanley Works, New Britain, Conn., Coast Sale offices, San Francisco, Los Angeles and Seattle, Wash
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES AND INCINERATORS
Kerner Incinerator Co., 77 O'Farrell St., San Francisco.
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission st., San Francisco.
Cobbledick-Kibbe Glass Co., 175 Jessie St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT
Ellery Arms Co., 583 Market St., San Francisco.
A. G. Spalding & Bros., 625 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Dieckmann Hardwood Lumber Co., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Hardwood Company, First street, near Broadway, Oakland.

HEATERS—AUTOMATIC, GAS, ELECTRIC
Electric Sales Service Co., mfrs. of Therm-elect Water Heater, West Berkeley.
"Humphrey Radiantfire," The General Gas Light Co., 768 Mission St., San Francisco.
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING CONTRACTOR'S, EQUIPMENT, ETC.
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon streets, San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
C. A. Dunham Co., Sheldon Building, San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Knittle-Cashel Co., 224 Fifth street, San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Moline Heat, Hobart Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
O. M. Simmons Co., 115 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 770 O'Farrell street, San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

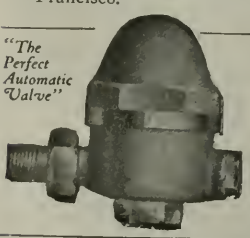
INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant streets, San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

INCINERATORS
Kerner Incinerator Co., 77 O'Farrell St., San Francisco.

INTERIOR DECORATORS
Atherly Bros., 2032 Polk St., San Francisco.
Martin & Frederick, 1374 Sutter St., San Francisco.
John Breuner Co., 281 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
Taylor Galleries, 1635 Broadway, Oakland and San Francisco.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ARCHITECTS' SPECIFICATION INDEX—*Continued*

INTERIOR DECORATORS—Continued
The Tormey Co., 1042 Larkin St., San Francisco.
A. Quandt & Son, 374 Guerrero street, San Francisco.

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Thomas Day Company, Mission, near Third street, San Francisco.
Roberts Mfg. Co., 663 Mission St., San Francisco.
Perfeclite Manufacturing Co., Seattle, Wash.; San Francisco Representatives, Myers & Schwartz, 75 New Montgomery street, San Francisco; 1119 S. Los Angeles street, Los Angeles.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter street, San Francisco.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco

LUMBER
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California street, San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company. 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.

METAL DOORS AND WINDOWS
Fire Protection Products Co., 3117 20th St., San Francisco.
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

METAL FURNITURE
Forderer Cornice Works, 269 Potrero avenue, San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.
Frank Portman, 1619-20 Mission St., San Francisco.
Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.

OFFICE EQUIPMENT
C. F. Weber Co. 985 Market St., San Francisco.
Rucker-Fuller Co., 677 Mission St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

OIL BURNERS
Bunting Iron Works, 1215 First Nat. Bank bldg., San Francisco.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.
W. S. Ray Manufacturing Co., 29 Spear street, San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

KNITTLE-CASHEL CO., Inc.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

ORNAMENTAL IRON AND BRONZE.
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Federal Ornamental Iron Works, San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San cisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
Atherly Bros., 2032 Polk St., San Francisco.
Wayne & Williams, 1914 Fillmore St., San Francisco.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.
A. Quandt & Son, 374 Guerrero street, San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.
Palace Hardware Co., 581 Market St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PIPE FITTINGS
Victory Manufacturing Co., Monadnock building, San Francisco.

PLAYGROUND APPARATUS
A. G. Spalding & Bros., 625 Market St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Thos. Brodie, 2119 Fillmore street, San Francisco.
Gilley-Schmid Company, 198 Otis street, San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
All-In-One Company, 231 Oschner building, Sacramento.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
National Valve Company, 23-25 Minna St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Metals Mfg. Co., 1300 N. Main st., Los Angeles.
Victory Mfg. Co., 423 Monadnock Bldg., San Francisco.
West Coast Porcelain Manufacturers, Rialto building, San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California street, San Francisco.

POWER PLANTS
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PRELIMINARY ESTIMATES AND VALUATIONS
Arthur Priddle, 185 Stevenson street, San Francisco.

PUBLIC QUANTITY SURVEY PLAN
Arthur Priddle, 185 Stevenson street, San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
California Hydraulic Engineering & Supply Co., 70 Fremont St., San Francisco.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

QUANTITY SURVEYOR FOR CONTRACTORS
Arthur Priddle, 185 Stevenson street, San Francisco.

RADIATOR TRAPS
C. A. Dunham Co., Sheldon Bldg., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Building, San Francisco.
Gunn, Carle & Co., Inc., 444 Market street, San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Truscon Steel Co., 527 10th St., San Francisco.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, 765 Mission street.

ROOFING CONTRACTORS
Bender Roofing Company, Monadnock Bldg., San Francisco.
Hill, Hubbell & Co., No. 1 Drumm street, San Francisco, and San Fernando Bldg., Los Angeles.

ROOFING AND ROOFING MATERIALS
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

Yards:
Tracy – Brentwood
Patterson – Newman
California

Phones:
Kearny 2073 - 2074

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Hardwood Interior Trim a Specialty
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SAN FRANCISCO, 177 Stevenson Street
OAKLAND, 1001 Franklin Street
LOS ANGELES, 908 Washington Building
SAN JOSE, 16 North First Street

When writing to Advertisers please mention this magazine.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFES AND LOCKS
Hermann Safe Company, 216 Fremont street, San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Forderer Cornice Works, 269 Potrero ave., San Francisco.
Knittle-Cashel Co., 224 Fifth street, San Francisco.
Pacific Heating Company, Second and Grove streets, Oakland.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SHINGLES—STONE
McClenahan Products Co., Inc., 112 Kearny St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

STATIONERY AND SUPPLIES
Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.
H. S. Crocker Co., 565 Market street, San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Western Pipe and Steel Co., 444 Market street, San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Moore Shipbuilding Company, Oakland.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Union Construction Co., 604 Mission street, San Francisco, and Key Route Fell, Oakland.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL ROLLING DOORS
Pacific Building Materials Co., Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles. Waterhouse-Wilcox Co., San Francisco.
Rolph, Mills & Co., San Francisco, Los Angeles, Portland and Seattle.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Lupton" steel sash, Waterhouse-Wilcox Co., agts., San Francisco, Los Angeles and San Diego.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.
Truscon Steel Company, 527 Tenth street, San Francisco.

STORE FRONTS
The Kawneer Manufacturing Company, West Berkeley, California.
Zouri Safety Sash Bars—Cobbledick-Kibbe Glass Company, 175 Jessie St., San Francisco.

STUDDING—FIREPROOF STEEL
Steel Studding Company, 1216 Folsom St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.
Western Electric Safety Switch Co., Inc., 247 Minna street, San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market street, San Francisco.
Rucker-Fuller Desk Co., 677 Mission street, San Francisco.

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission street, San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

TILE FOR ROOFS
Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Sharon Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.

VALVES—PIPES AND FITTINGS
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Co., 115 Mission St., San Francisco.
H. Mueller Mfg. Co., 635 Mission street, San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco
Shroeder Direct Flush Valves, mfrd. by Standard Metals Mfg. Co., 1300 N. Main street, Los Angeles.
Victory Manufacturing Co., Monadnock building, San Francisco.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.
Everlasting Blow-off Valves. General Machinery and Supply Co., 39 Stevenson street, San Francisco.

VARNISHES
Bass-Hueter Paint Company, Mission, near 4th street, San Francisco, and all principal coast cities.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, Rialto Building, San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Gunn, Carle & Co., Inc., "Hydrate," 444 Market street, San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.
Baird-Bailhache Co., 478 Sutter street, San Francisco.

WATER CLOSET CONNECTIONS
Victory Manufacturing Co., Monadnock building, San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SASH CHAIN
The Smith & Egge Mfg. Co., Bridgeport, Conn.

WINDOW SHADES
National Window Shade Co., Inc., 244 Eddy Street, San Francisco.
W. & J. Sloane, 216 Sutter street, San Francisco.
D. N. & E. Walter, 562 Mission street, San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
The Kawneer Company, West Berkeley, California. (Simplex Fixtures.)
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FENCE
Standard Fence Co., 245 Market street, San Francisco; and 310 12th street, Oakland.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 827 Mission St., San Francisco.

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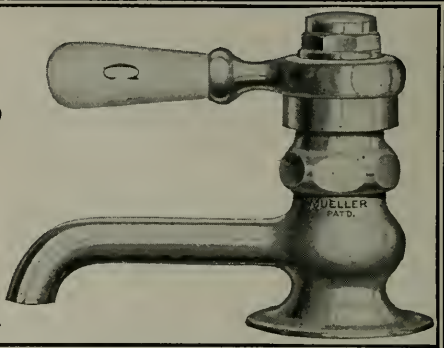

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For specifications, see page 389, Sweet's Architectural Catalogue, 15th Edition.

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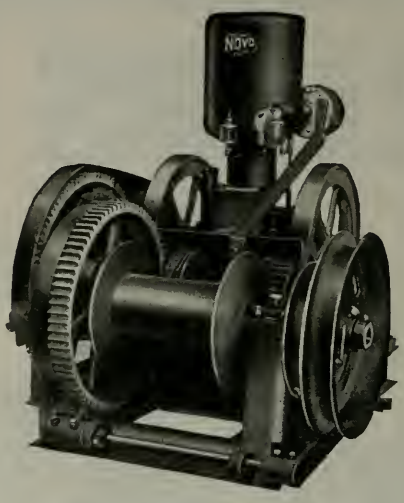

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Redwood is unequalled for the special uses to which it is adapted, and for these uses the available supply is adequate for generations. Meanwhile, according to U. S. Forest Service Bulletin 38, merchantable second-growth Redwood is produced in less than 60 years by natural growth from the stump.

This advertisement appeared in the August issues of Atlantic Monthly, Century, Harper's, Review of Reviews, Scribner's, World's Work and Sunset Magazine.

THIS advertisement is written with just one purpose in mind: to send prospective home-builders to their logical technical advisers—the architect, the building contractor and the lumber dealer—with a question: "What About Redwood?" You can answer this question, and it is your opportunity to secure a client or a customer. Complete information, prices and specifications may be obtained by addressing any of the sales and distributing branches listed below:

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A. C. *Dutton Lumber Corporation, (agent), Springfield, Mass.*
The Pacific Lumber Company, 311 California Street, San Francisco, and Central Bldg., Los Angeles, California.

The Pacific Lumber Co., of Illinois, 522 Fifth Ave., New York City; McCormick Bldg., 322 S. Michigan Ave., Chicago, Ill.; Grand Ave., Temple Bldg., Kansas City, Mo.
Union Lumber Company, (representing two additional producing companies†), Crocker Bldg., San Francisco; Merchants National Bank Bldg., Los Angeles, Calif.; 2850 Grand Central Terminal Bldg., New York City; McCormick Bldg., Chicago, Ill.

MEMBER COMPANIES (*San Francisco Offices*)

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*Dolbeer & Carson Lumber Company
†Glen Blair Redwood Company
*Hobbs, Wall & Company
*Holmes, Eureka Lumber Company
*Little River Redwood Company
†Mendocino Lumber Company
Union Lumber Company
*Northwestern Redwood Company
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Architect, SAMUEL N. CROWEN

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624 Henry Building, - Portland, Ore

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Portland Spokane Seattle Tacoma

In Warehouse Stock

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WHEN the storm has run its course, and quiet once again reigns over every wave, it is well to take a check on our course.

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YOUR clients are interested in results. You must supply the knowledge that brings these results.

A Few Fuller Products

PIONEER WHITE LEAD has become so well known, because it gives the results demanded by both master painter and home owner.

FULLER'S WASHABLE WALL is the kind of wall finish that produces the soft water-color effects with the durability of an oil paint.

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FULLER'S SILKENWHITE ENAMEL, a pure white, lustrous and durable enamel for interior and exterior use. Dries with a full brilliant gloss. Also may be secured in the eggshell and flat.

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TERRA COTTA CHIMNEY PIPE
FAIENCE TILE
DRAIN TILE
WATER PIPE

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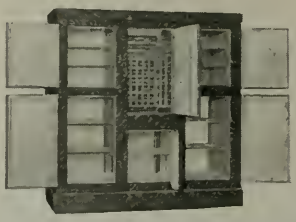

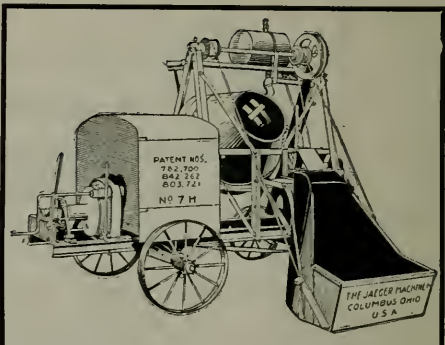

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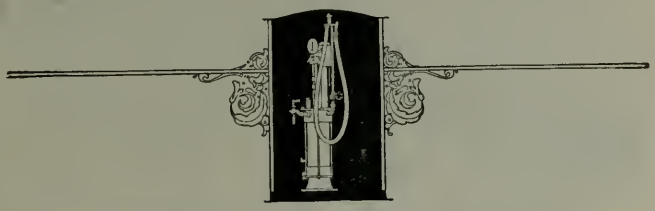

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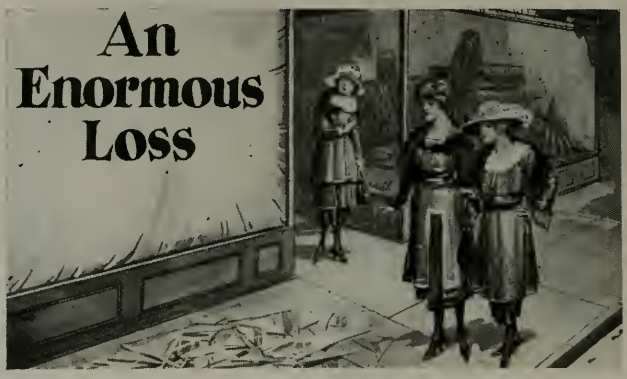

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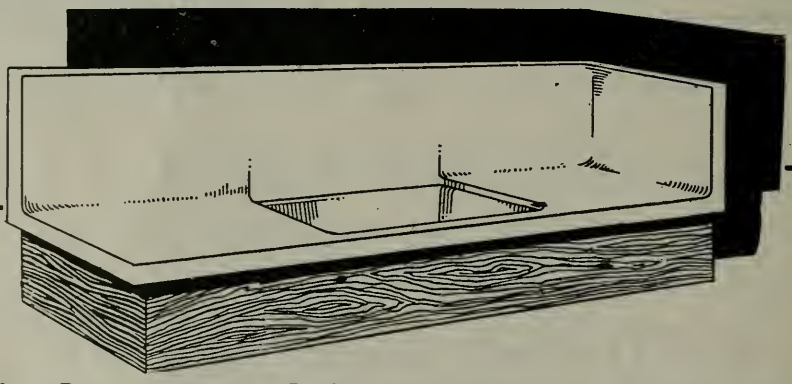

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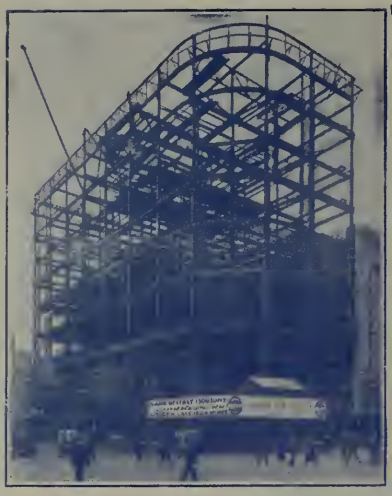

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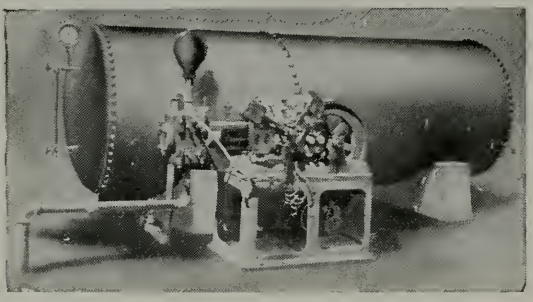

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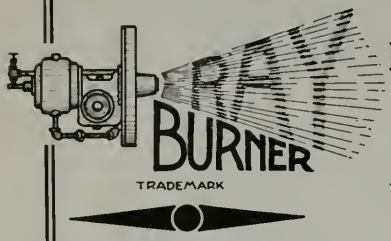

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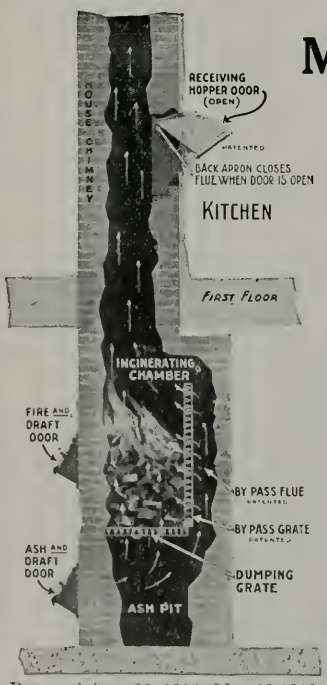

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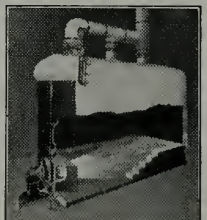

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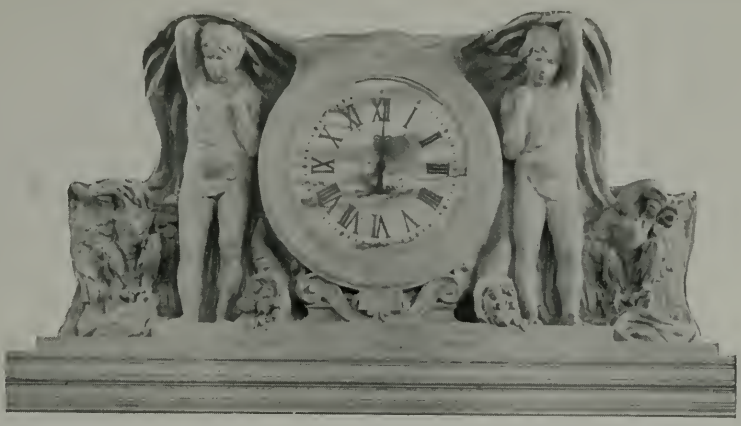

THE ARCHITECT AND ENGINEER

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THE
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SEPTEMBER
1921

Vol. LXVI
No. 3

The New Bank of Italy, San Francisco*

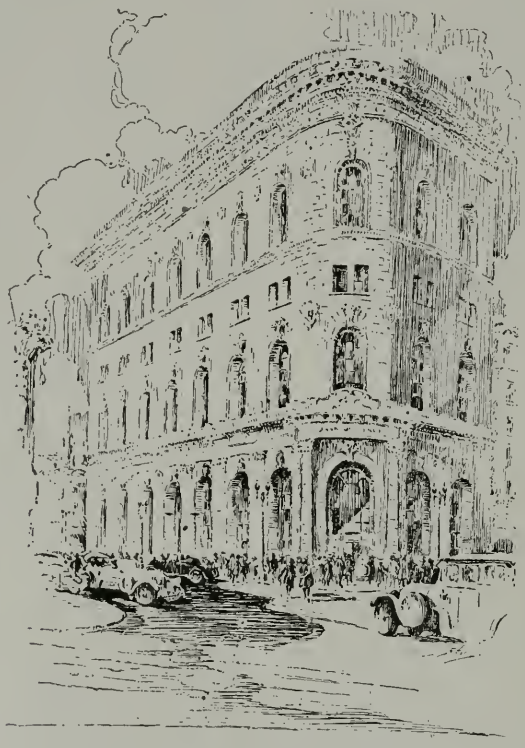
By IRVING F. MORROW

AS there is a certain advantage in clearing the way for business by attending to disagreeable duties at the outset and knowing them done with, I prefer to inaugurate the discussion of the Bank of Italy by taking up McKim's University Club. I stigmatize this as a disagreeable duty because I should have preferred to pass quite without comment the question of the relation between the two buildings. A discussion which avoids the one subject most people would find to talk about smacks of the *tour de force,* which affords a certain personal gratification; and besides, I place this much-mooted plagiarism among the least important matters to be dealt with. Critics, however, no less than politicians, feel obliged on occasion to consult the prejudices of their constituencies. Important competitions are always accorded a double judgment, passing from the official jury which selects the winning design to a semi-official one consisting of unsuccessful competitors and followers, which determines the sources from which the winner was stolen and the reasons why it should not have been chosen. Ever since the award of the competition for the Bank of Italy, which is to say for the last two and a half years, mention of Messrs. Bliss and Faville's building has been attended by glances and whisperings insinuating improper relations with McKim's, until today anybody solicitous of his erudition and his morals dare indulge no spontaneous impression in regard to the building, and every student draftsman and office boy, who would not recognize a picture of the University Club if he saw one, knows that the Bank of Italy is a "steal" from it. I bring the subject up, therefore in self defense. Were I to carry off an entire review of the new building without so much as a mention of the prototype, I should be accused of ignorance of this pleasant bit of erudition; and how can a critic look for respect for his opinion to survive a demonstrable deficiency in his erudition?

As a matter of fact, I have done one thing which probably few of the scandalized whisperers of plagiarism have taken the trouble to do;

*Photographs by Gabriel Moulin, San Francisco.

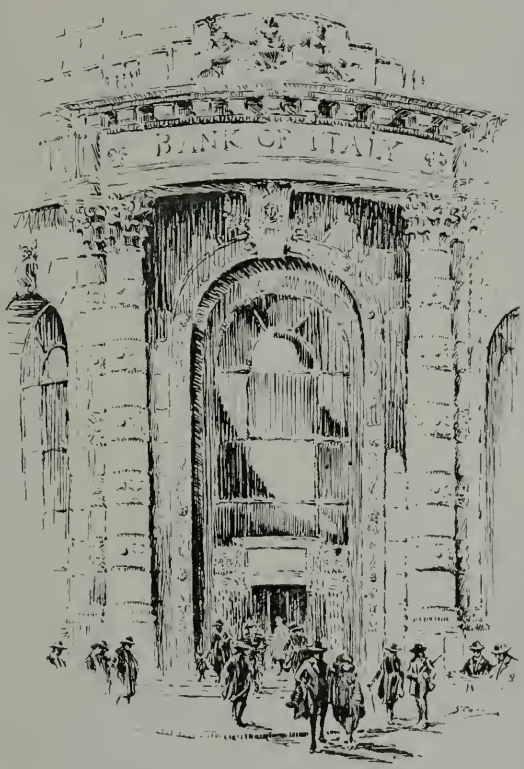
namely, I have looked up the University Club. The need for this may be charged as evidence of faulty erudition; but it was an interesting experience, and comparison with the building under discussion was illuminating. Without attempting to deny it as a source of inspiration, which would be quite unnecessary, I confess that I was not a little struck by the very obvious differences in composition and in spirit. It is quite probable, however, that even were everybody to indulge the same salutary curiosity, it would make little difference with the common attitude as to the allegation of plagiarism. The popular point of view in this matter seems capricious in the extreme. Determination of just what degree of re-



BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects

semblance to a prototype will be popularly tolerated as legitimate, or, in other words, of the line between inspiration and plagiarism, seems to rest on no tangible principle. Some buildings are particularly lauded because of the fidelity with which they duplicate previous models; others are as unqualifiedly condemned for so much as revealing the sources of their inspiration. From certain quarters we hear strenuous invocations calling forth a distinctively American architecture; but, without touching upon the eligibility for this purpose of the style under consideration—a matter which, in the long run, can not be settled by taking thought—it seems to be overlooked that the evolution of a style in the historical sense can only come about through the continued and consistent re-use of certain sets of

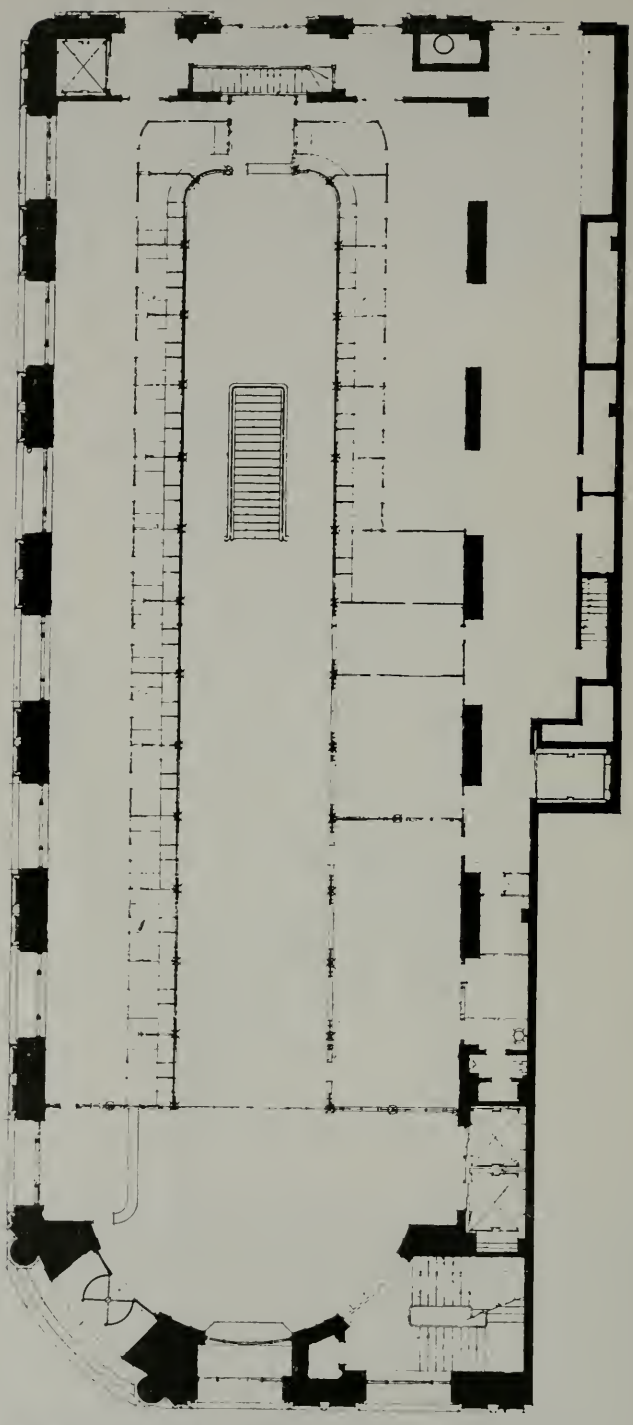
generally accepted motifs. The only apparent relation which emerges from a consideration of cases is that the more remote a model is, and consequently the less adaptable it is likely to prove to current requirements, the more meritorious its reproduction is considered. Messrs. Bliss and Faville might have opened the "Fragments d'Architecture Antique" and laboriously duplicated the Parthenon from carefully measured drawings, and, even though the result might not have satisfied half of the requirements of their problem, received generous recognition for their pains. The ingenuity which can devine a good bank in the material of a club by a designer only recently dead appears to be considered a less respectable



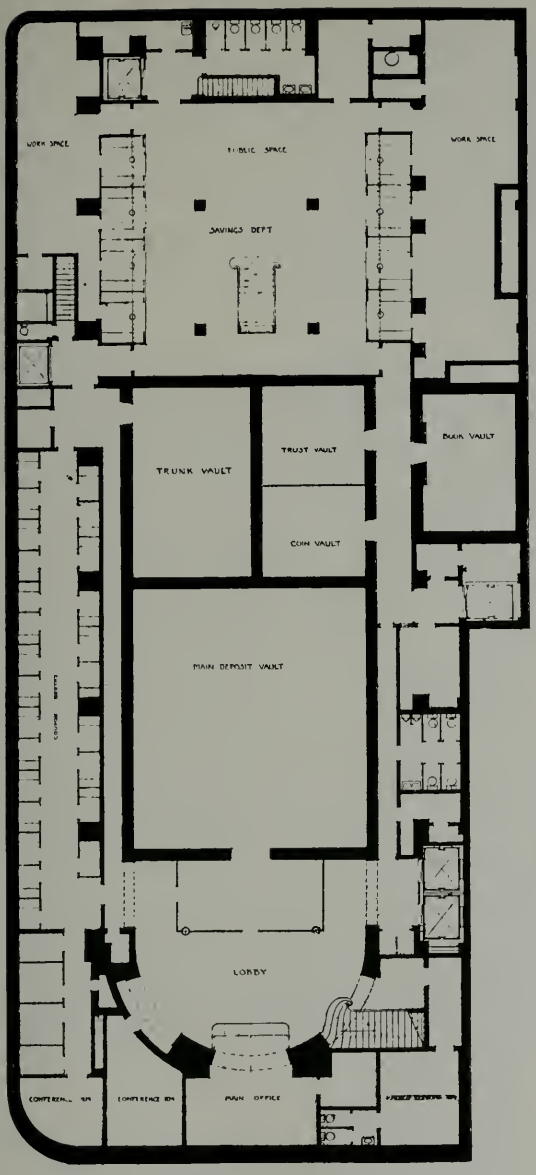
BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects

achievement. There is one fact, however, which is commonly overlooked, but from which I believe there can be no reasonable dissent. If the University Club is admittedly a club building, the Bank of Italy is as unquestionably a banking institution. This, after all, is the most important aspect of the matter, for it means that, apart from all controversies as to sources and debts, the composition and expression of the building have received independent study—and solution.

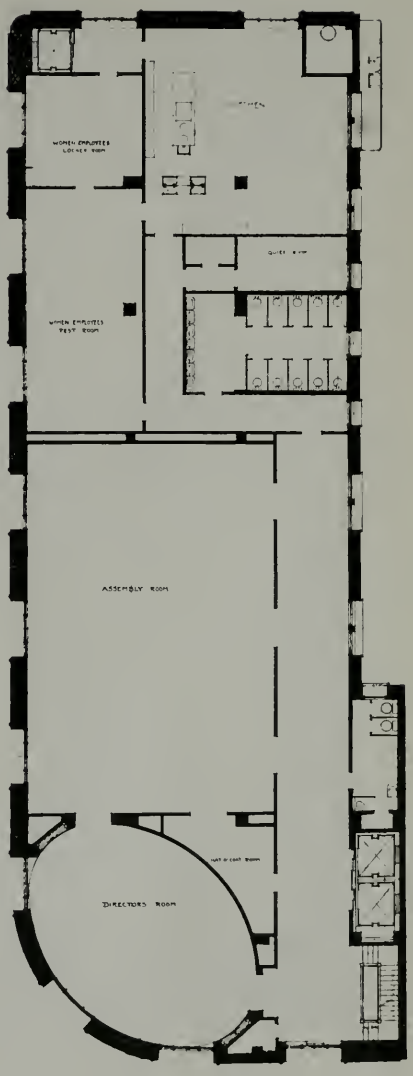
One other feature of the building which has been the subject of considerable criticism at large is the alleged discrepancy between section and elevation. And here is an objection which, from the academic point of view, might seem entitled to serious consideration. For as there are



MAIN FLOOR PLAN, BANK OF ITALY, SAN FRANCISCO
BLISS & FAVILLE, ARCHITECTS
(Plan reproduced at scale of 1 inch=24 feet)



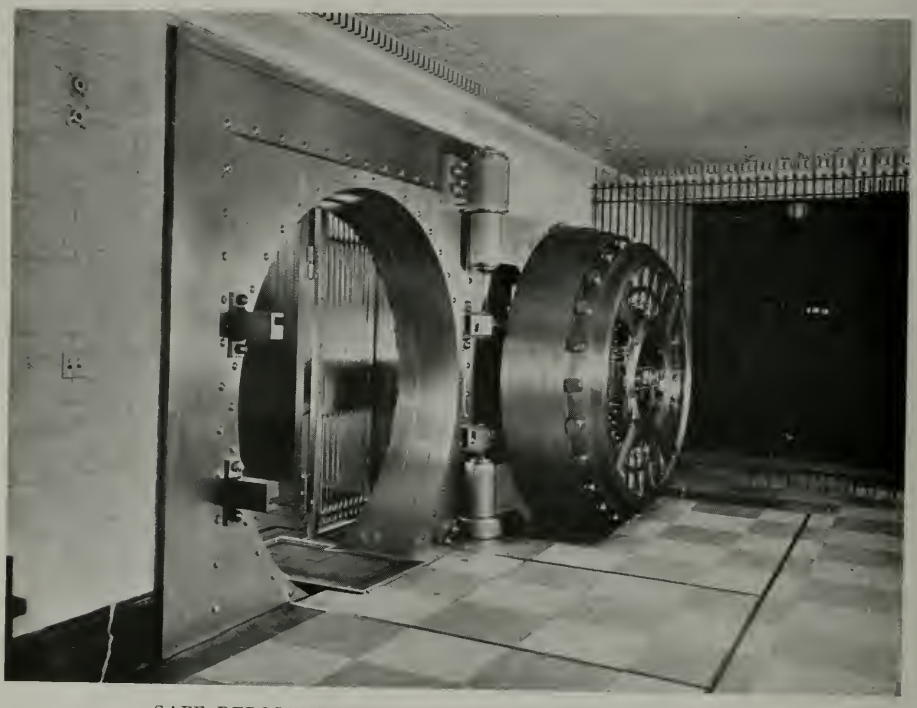
BASEMENT PLAN



SIXTH FLOOR PLAN

BANK OF ITALY, SAN FRANCISCO. BLISS & FAVILLE, ARCHITECTS
(Plans on this page reproduced at scale of 1 inch=32 feet)

certainly fewer superimposed stone openings appearing on the facade than there are floors within, the large arches of the middle and upper stories must light more than one floor each, which the purist sets down as a lapse from architectural truth. Yet the moment the situation is considered concretely in the light of the conditions actually to be met, and, for that matter, of the approved practice of practically all schools of architecture which have essayed construction of more than one story, the speciousness of the argument becomes apparent. The purists themselves will not blink at the sight of a colonnade which harbors two or more stories in the height of the column, or of a two-story arcade as the crowning element of a lofty office building. The only uncommon feature of the Bank of Italy is the application of the same principle to the middle



SAFE DEPOSIT DOOR, BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects.

Vaults and Safe Deposit Boxes installed by The Hermann Safe Co., San Francisco

stories, which can hardly within reason be charged as less legitimate on principle. It is surely an arbitrary and unwarranted assumption, justified by no logic either of structure or of ethics, to insist that no architectural motif shall extend vertically through more than one story of a building, or that every floor spandril shall be of the same material as the wall or piers. The question of frankness does not seem really to be involved, since no observer, save only the most ingenuous, would mistake the Bank of Italy for a four-story building. Frankness is an admirable and necessary characteristic; but just as there arise in life numerous occasions where unintelligent frankness can hinder reasonable social relations, so in art brute frankness untouched by imagination may lead to sheer stupidity ("arts and crafts" furniture is generally frank). The average mod-

ern city commercial structure presents so uniform a monotony of requirements that it is only by the exercise of more or less ingenious expedients which the extremists decry as insincere that it can be rendered humanly bearable. It is, indeed, only by lapses from the ideal perfection of theoretical frankness that many of our stupid and monotonous social relations are rendered bearable. I question if there has yet been devised any method of composition based on a rigorous floor by floor correspondence in fenestration which would have given an effect of breadth and scale such as the building actually attains. The treatment which has been adopted would appear unnatural in a building devoted to miscellaneous rented offices, but as here employed it unmistakably proclaims a building devoted to the exclusive use of an important institution. Why may not

DIRECTORS' ROOM, BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects.

this be regarded as a spiritual sincerity, more significant than an inventory of the number and use of floors, which any clerk is competent to draw up?

If I have dwelt on these current criticisms at some length, it is because I have found them so prevalent, and because I regard them as essentially unjust, or at best not entitled to the weight commonly attributed to them. The particular danger of such ethical prejudices is that they tend to inhibit spontaneous reactions on questions which are purely aesthetic. Many observers have been so intimidated by the allegations that the Bank is a "steal" and a "fake" that they have become unable or unwilling to resign themselves to an appreciation of its real qualities as design. As a matter of fact, it is a building of unusual distinction, ably composed and proportioned, noble in scale, detailed with fine taste, and executed with beautiful perfection. Fine sensibility and broad experience

are evidenced by the composition and handling alike. Of specific flaws on the exterior perhaps only one warrants being cited as detrimental in any real sense to the total result. I refer to the sculptured relief over the main entrance, which, apart from any question as to its merits *qua* sculpture, fails to meet the requirements of its situation as to either character or scale. Admitting all these positive merits to the building's credit, however, there are still reservations to be made for a pervading lack of warmth. It commands respectful attention, even admiration, but stops short of compelling enthusiasm.

CEILING IN DIRECTORS' ROOM, BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects.

But if it is possible to pass by on the street with a more or less calculating recognition, surely to anyone who delights in fine spaces and forms and colors, entrance into the great banking room must be genuinely exhilarating. This room embraces substantially the entire ground floor of the building, including the entrance lobby to the upper floors, which is architecturally one with it, separated only by a metal grille. The walls are plain travertine plaster; the ceiling is richly but discretely modeled and judiciously touched with gold; counter wainscots and floors are of inlaid marbles, of prevalent golden and travertine hues, trimmed with green and black; but of all features of the interior incomparably the most

effective are the superb grilles of cast and wrought iron which form the running bank screens, the standards for the check tables, the lighting fixtures, and rise at the salient points of the composition (entrance vestibule and end of the long nave) into magnificent compositions reminiscent of the Spanish church *rejerias*. This iron work is left in the main black, but the spotting of the open work design has been delicately enforced and accentuated by an exceptionally judicious touching of color, dull red, blue, and green, which gives the whole fabric breath without compromising its

CEILING IN DIRECTORS' ROOM, BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects.

strictly decorative role. Fine simplicity and stability characterize the structural essentials of the room, while the decorative detail is handled with just the correct touch of delicacy. There is no lapse from perfect taste and consistency in design, or from perfection of finish. The volume of the room is superb. It is unquestionably one of the finest things, not only of its kind, but of any kind, of which our community can boast.

The remainder of the building is handled consistently with the great room, though in the nature of things there is nothing else comparable with these main banking quarters. The same wrought iron is carried

throughout in stair rails and lighting fixtures, and a similar Italian spirit in the detail prevails. Deserving of individual notice are the Savings and Safe Deposit departments, both down stairs; the special women's banking quarters, in which rose drapes and upholstery lend a gracious atmosphere, and an employes' assembly room with segmental barrel ceiling, severely simple but very effective. For the Directors there is a handsome elliptical room with rich ceiling in very flat relief.

The main banking room is unobstructed by columns, which has necessitated 54 foot girders carrying the remaining floors. This has given rise to interesting structural problems in connection with provision for bending due to wind loads.

It should be pointed out that iron lighting fixtures are contemplated at each bay along the main banking screen, but are not yet in place.

PRIVATE OFFICE OF MR. A. P. GIANNINI, PRESIDENT BANK OF ITALY
Furniture designed by Martin and Frederick

The Bank of Italy Furniture

Practically all the furniture in the new Bank of Italy building was especially designed and built by Messrs. Martin and Frederick, 1374 Sutter street, San Francisco, who have departed somewhat from the regular standardized type of office furniture by combining sturdiness with beauty. Every piece of furniture was made for each individual room. The furniture in the executive offices, with the exception of the directors' room, reflects a strong and decided feeling of the Italian Renaissance. The general design of the furniture and draperies in the directors' room is of the Adam period.

The efforts of Messrs. Martin and Frederick to produce something different from the stereotyped office equipment have been very gratifying to officials of the bank.

WOMEN'S BANKING ROOM

ASSEMBLY ROOM, BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects.

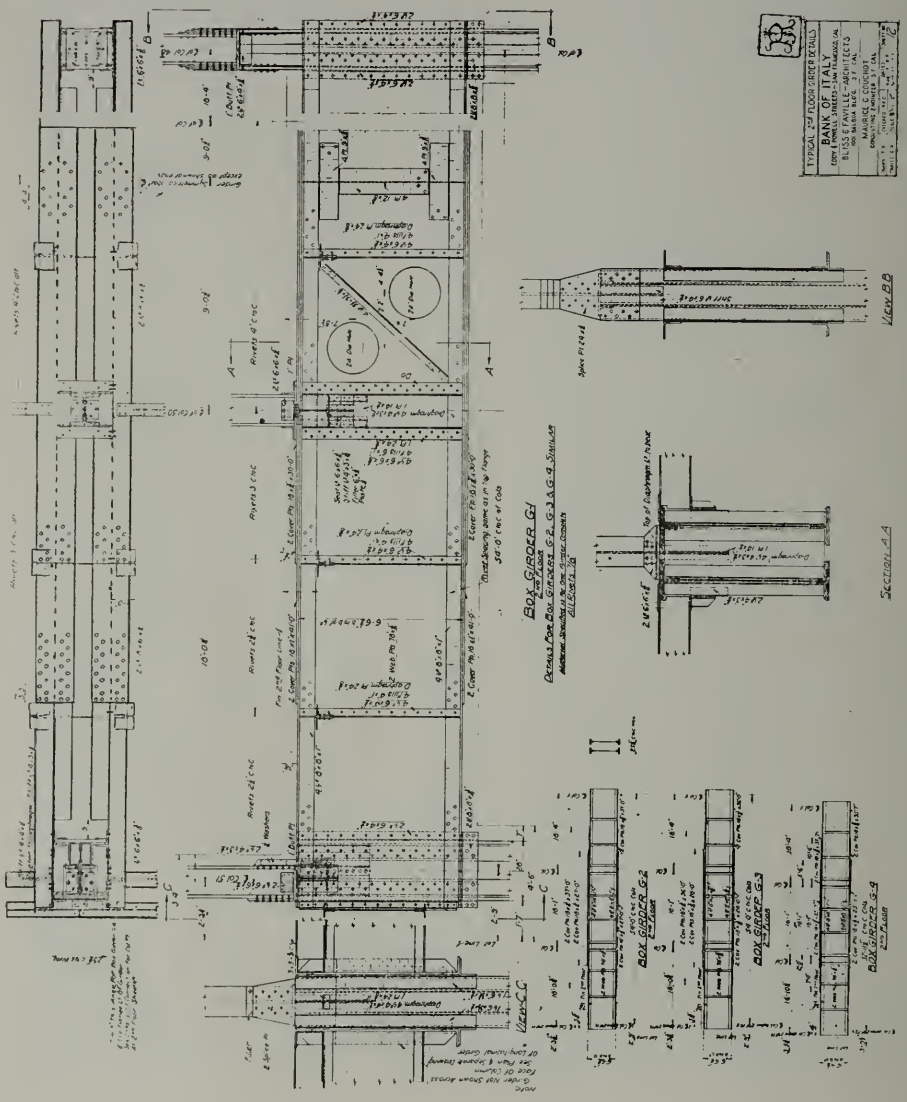
BANK OF ITALY, SAN FRANCISCO
BLISS & FAVILLE, ARCHITECTS

MAIN ENTRANCE, BANK OF ITALY, SAN FRANCISCO
BLISS & FAVILLE, ARCHITECTS

ENTRANCE LOBBY AND BANKING ROOM, BANK OF ITALY, SAN FRANCISCO. BLISS & FAVILLE, ARCHITECTS

Grille work by Federal Ornamental Iron & Bronze Company, San Francisco.

BANKING ROOM, BANK OF ITALY, SAN FRANCISCO
BLISS & FAVILLE, ARCHITECTS



GIRDER OVER BANKING ROOM, BANK OF ITALY, SAN FRANCISCO
BLISS & FAYILLE, ARCHITECTS; MAURICE C. COUCHOT, ENGINEER

ENTRANCE LOBBY AND BANKING ROOM, BANK OF ITALY, SAN FRANCISCO. BLISS & FAVILLE, ARCHITECTS
Grille work by Federal Ornamental Iron & Bronze Company, San Francisco.

BOND DEPARTMENT, BANK OF ITALY, SAN FRANCISCO
Bliss & Faville, Architects.

DETAIL IN BANKING ROOM, BANK OF ITALY, SAN FRANCISCO
BLISS & FAVILLE, ARCHITECTS

DOORWAY, MISSION SAN IGNACIO DE CABURICA

The Arizona-Sonora Chain of Missions*

By PRENTICE DUELL, A. M.

II. The Missions of Sonora

GEOGRAPHICALLY speaking the missions of Sonora are divided into three groups, each tending toward the north along the banks of a small stream which ultimately finds its way into the Gulf of California. For convenience these groups may be classified as the eastern, central and western, and it is the central group which extends farthest north and embraces the missions in Arizona. Those of the eastern group were not rebuilt to any extent by the Franciscans, so today they are of more interest to the archaeologist than to the architect.

The central and western groups, however, are of vital architectural interest and the missions will be considered in their respective order, beginning with the central group at the United States border and following

NAVE AND ALTAR, NUESTRA SENORA GUADALUPE DE COCOSPERA

down to the last mission; then beginning with the first mission of the western group and continuing up to the border again.

The first mission then to be considered is Nuestra Senora Guadalupe de Cocospera. Crowning the top of a small isolated hill, known among the Mexicans as the "Hill of the Dead," the mission commands a view of the entire valley, wherein once lay the fields of the padres. The picture Cocospera makes against the sky is sinister enough; the remains of the two bell-towers rise high above the crumbling ruin and in its desolation one can almost read that its history was full of sadness. For protection against the marauding Apaches it had to seek the heights, but nevertheless it finally succumbed and suffered destruction at their hands. At a later date the Mexicans dug up the ground about the church, seeking the buried treasure of the padres, which seems to have been the chief avocation of the past generation. The church was thereby undermined and it only remained for an earthquake to complete the mission's destruction.

*Measured drawings copyrighted by author.

The "lay-out" of the ensemble is very much like that of a feudal castle in the Rheinland. On the crest of the hill rises the church proper with a row of dormitory rooms joining at the left and extending to the rear. Another row of rooms to the rear enclosed this space forming a patio. It is very probable that a cloister ran around the four sides, though no evidence of it remains. Seemingly, the mission group was, in turn, surrounded by another quadrangle of rooms, forming a defensive wall. A large gateway was placed in this wall with bastions on either side, for its defense.

The church as it stands is a Franciscan restoration of the original

NUESTRA SENORA GUADALUPE DE COCOSPERA

Jesuit work. The nave is rectangular, as is usual with Franciscan missions, whereas Father Kino, the jesuit who built the church speaks in his diary of its being cruciform. It appears that the Franciscans rebuilt parts of the adobe walls to conform to the new plan and then faced the inside walls with burned brick. Likewise the ornamental facade of the church is merely a brick veneer standing against the heavy adobe wall. Its design is thoroughly Franciscan and bears strong evidence that it was done by the same men who built San Xavier in Arizona. Their general decorative scheme is very similar, save that that of San Xavier is infinitely more developed. Referring to the illustrations of San Xavier in The Architect and Engineer for July, it can be seen that the enclosing moulding is the

same in both instances as to purpose and contour and where it joins a circle on Cocospera, a step farther resolves it into a spiral on San Xavier. Furthermore, the gable of Cocospera is pointed with a circle beneath; that of San Xavier is merely made more interesting by breaking a curve and enclosing the circle. The pilasters are similarly placed in each case and the horizontal mouldings have the same contours. However, there is no evidence that Cocospera had the fanciful columns standing before the pilasters, one of the attractive features on the facade of San Xavier.

The entrance leading into the nave is very striking with its elaborately scalloped arch, which recedes conically towards the doorway. These lines

WEST DOORWAY, SANTA ANA

converging might have had a psychological effect upon the Indian in drawing him into the church, especially since the scallops were painted in vivid colors.

One is reminded upon first entering the nave of a brilliant watercolor. The sunshine coming through the dilapidated roof makes the frescoes fairly sparkle, which is emphasized all the more by contrast with the dark weather stains down the walls. On either side of the nave are two elliptical chapels whose arches respectively increase in height towards the great triumphal arch before the main altar. The decorations about the altar are rather primitive and probably were done by an Indian. In the

scallops which frame it various fruits are represented, signifying the land of plenty or the "New" Canaan, while from the two hugh vases spring bursting pomegranates, awkwardly bound by the Franciscan cord The main altar of San Xavier is also arched with scallops and the Franciscan cord terminates in two large tassels after playing a prominent part in the entablature which extends around the walls below the upper windows. With Cocospera, however, the entablature is merely a cap moulding and follows a rather promiscuous path about the walls as conditions direct. Over the entrance is, of course, the choir-loft, supported by large mesquite beams, the corbels of which are interesting, if somewhat fantastic. From all appearances, the roof of the church was in the form of a barrel vault constructed entirely of wood and supported by brick arches which spring from the wall pilasters. An early explorer mentions a dome but no trace of it remains. It might be that he was referring to the cupolas

MISSION SAN IGNACIO DE CABURICA

surmounting the towers. From an old sketch they appear to have been pyramidal in form with sides corresponding to the octogonal towers.

On the whole the ruin of Cocospera is too decided to warrant measured drawings with any claim to accuracy and what does remain gives only a faint impression of its original charm and beauty. However, from the artist's point of view it is undoubtedly the most picturesque of all the mission ruins.

Some miles to the south is the village of Imuris, a very old settlement with the original mission in ruins and a new church built beside it. Here the bells of Coscopera may be found, their dates indicating that they hung in the church of the Jesuits. The study of campanology is indeed fascinating, especially with reference to the mission bells. It should make an ideal hobby for an architect, who might indulge in curiosities, considering the many belfrys and the shapes of the bells themselves with their significance, their quaint inscriptions in Latin or old

Spanish letters and the colorful legends which have grown up around them.

A few miles further on stands San Ignacio de Caburica, one of the best preserved missions in Sonora. The church has never been abandoned since its founding and today the people work in the same fields which were tilled by the padres. The church is maintained in such excellent repair that one can really get a first-hand impression of a mission intact, although the adjoining buildings have disappeared.

Upon giving the structure some study, every evidence seems to point out that there was no master-builder in charge. The plan is not well studied, though it is laid out quite accurately. By means of the low chapels on either side of the nave a cruciform plan was attained; but this merely led to difficulties, for when the dome was to be built, the masons found that there was no lateral support, such as is to be had

MISSION SAN IGNACIO DE CABURICA

from transepts, so they had to push it back to the rear wall over the apse. It means that the padre in charge must have seen San Xavier or Caborca during the course of their construction and had come back to San Ignacio with the intention of doing likewise, forgetting in the interim just how the dome rose over the crossing of the nave and transepts. To make matters worse, a heavy brick roof in the form of a barrel vault was added; then fearing lest the whole structure would collapse, since the walls were of adobe and only faced with brick, the builders descended and built a tremendous buttress on either side to react against the force from above — a sort of coup de grace in spite of a bad beginning.

However, San Ignacio is full of interest in that the Indians must have had much to do with its erection. The architectural decorations throughout are Indian and it is a question whether the elaborately carved doors were not done by some Indian craftsman under the direction of the pa-

dres. The facade undoubtedly has merit; there is a certain restraint in the handling of the mass which balances somewhat the audacity in the matter of detail, giving on the whole, a rather effective composition. The doors and windows are placed where necessity demands and the main decoration is reserved for the entrance, with only a slight suggestion of the pattern about the windows. To one side is the belfry, crowned by a pleasing cupola with the shell ornament and on the other is a drum-like tower from which the circular stairway makes exit to the roof. It will be observed that this stair tower was set a little way back from the

CARVED WOOD DOOR, SAN IGNACIO DE CABURICA

facade so as not to detract from the more important belfry. Between the towers rise three triangular forms of brick signifying the Trinity and at the same time tying together the various elements of the design.

The doorway of San Ignacio is quite out of the ordinary and deserves more than passing notice. Somewhat heroic and bold in conception, it is more intensely Indian or even Aztec than anything one might find in mission architecture. The decoration is for the most part Indian symbolism, bearing out the fact that the padres were very lenient with their neophytes and allowed them whatever artistic expression they might have had. The composition frames the two most beautiful doors found in the missions and they remain among the finest examples or wood

carving of that period. The doors are mezquite and the parts fastened together with brass boults, the heads of which are chased. The designs, following no especial repetition, have a feeling of monastic simplicity and seem to seek seclusion in the deep shadow of the doorway.

The route to the next mission, Santa Ana, lies through Magdalena, an important city, with the usual picturesque street architecture and sleepy plaza. The mission which stood here was torn down to give place to the modern church, an ostentatious structure done in the worst possible taste and a good example of what not to do. Its plastered facade is

ENTRANCE DOORWAY, SAN IGNACIO DE CABURICA

marked off with black lines to resemble stone joints and the teselations painted blue and yellow.

It seems a strange condition, but just as the smaller towns look upon their missions as old-fashioned and tear them down as soon as the municipal treasury can finance a new church, so Mexico City, itself, is inclined to look with disfavor upon the old Spanish architecture so dear to the hearts of many American architects. The old Spanish architecture is rapidly disappearing to make way for buildings along Beaux Arts lines, which seems to be considered quite the thing to do. Consequently, if the capital city sets no example in cherishing the old Spanish landmarks, one can not expect the smaller towns to do so. Magdalena, there-

fore, is no exception in not having preserved her mission and many of the villages, Imuris for instance, look upon a mission ruin as nothing more than a community brickyard.

A few miles below Magdalena lies the ruin of mission Santa Ana, probably the remains of the Jesuit church. Beside the ruin stands a new church, box-like and uninteresting, of a much later date. The side doorway, however, is rather pleasing and it is possible that portions of the old mission were incorporated in the new one; for the corbels, beams, and the Holy-water fonts seem to antedate the present structure.

With Santa Ana, the central group of missions has been completed, so the next group towards the west coast will be considered. The first mission with architectural value is Purissima Concepcion de Caborca, massive and imposing but rapidly falling to ruin. Some years ago the river changed its course and washed away the apse and the left transept, leaving the great dome over the crossing almost hanging in the air. Should

PURISIMA CONCEPTION DE CABORCA, FROM THE RIVER BED

the river rise again, the whole rear part of the church will fall. Nevertheless, the nave has been walled up and still serves as a place of worship.

Above all else, Purissima Concepcion is especially significant in that it is the prototype of San Xavier in Arizona. Both missions were undoubtedly built from the same plan but the former, being the first attempt, falls far short of the latter in refinement. With San Xavier, the facade was given additional height and the plan was made more pleasing to the eye; the dome and cupolas were given better form and the heavy buttresses were not repeated. The interior decoration in both churches was probably done by the same men, but unfortunately the walls of Purissima Concepcion have been whitewashed, covering completely the old frescoes and whatever other decoration there might be. The circumstance which prompted this act was that the people preferred looking at the pictures to listening to the admonitions of the priest.

It follows that the construction is very similar in both Purissima Concepcion and San Xavier. From the fallen portions of the former it be-

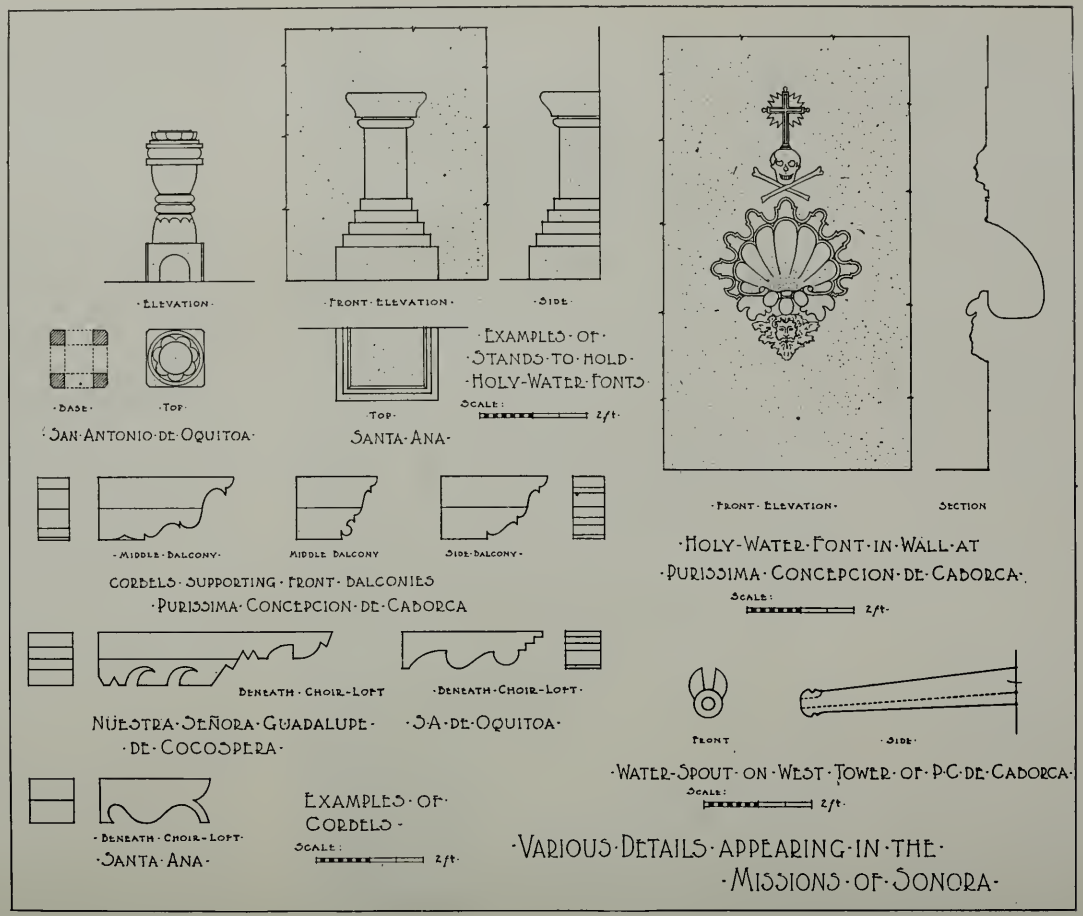
comes evident for the first time just how the walls were made. It was formerly believed that the walls of the larger missions were solid brick but here one finds they are merely fused on either side with brick and the middle is a cement mixture in which huge boulders are imbedded.

The village of Caborca is proudly aware that among her citizens is the Gaona family, great great-grandsons of one of the two Gaona brothers, master-builders, brought from Spain by the padres. Both Purissima Concepcion and San Xavier are known to be their work, though there was an architect in charge, probably the Pedro Bojorques mentioned in the last article. After meeting direct descendants of the mission builders one cannot help but wonder if the plans of missions themselves are not mouldering behind the dusty tomes in a library of some Mexican cathedral. A story goes that copies of the plans were retained in Mexico, probably with the Vicar-General or at the colleges from which the various groups of padres emanated.

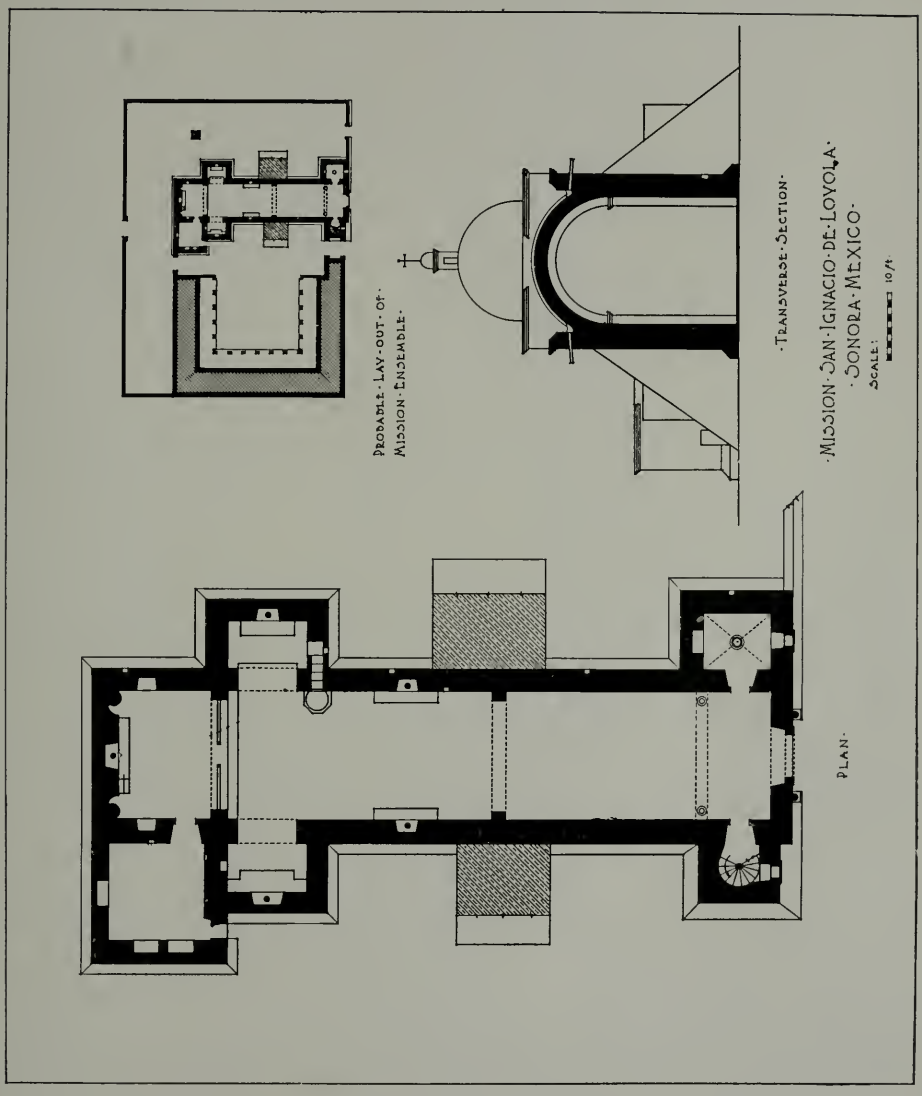
MISSION PURISIMA CONCEPTION DE CABORCA

It is also probable that the plans for the larger missions were drawn by architects connected with the church, as far back as the Middle Ages. The highest places in the church were attained by men whose chief recommendation was that they were architects. Gerbert, Archbishop of Rheims was an architect, having studied at the Moorish Universities in Spain, and later he became Pope. Another Church-architect was William, Abbot of S. Benigne at Dijon. His influence upon the architecture of his time was so great that men from all over Europe flocked to his school. The various Orders maintained large schools of architecture and it was through the impetus thus given that the tremendous enthusiasm for building sprang up which finally burst forth in the glorious era of the Gothic cathedrals.

That the names of the men who designed the larger missions have not come down to us is nothing exceptional since many of the greatest architects of that time who embraced the Orders were content to assume the modest title of mason and to build with little thought of personal glory.



DETAILS FROM THE MISSIONS OF SONORA



MISSION SAN IGNACIO DE CABURICA

Use of the Cement Gun for Exterior Plastering

By A. E. COLLINS

BY reason of the shortage of men for exterior plastering, the cement gun has had to be introduced on housing work with exceedingly satisfactory results. It consists of a steel upper cone with a valve at its bottom resting on an upper tank, also with a valve at its bottom separating it from the lower tank, at the bottom of which is a feed wheel rotating in a horizontal plane, the periphery of which consists of a series of pockets each of which is presented in sequence to the outlet nozzle leading to the delivery hose. A charge of ready mixed plastering material is placed in the upper cone, air under pressure in the upper tank is discharged by means of a cock, and the valve of the upper cone is opened, permitting the charge to fall into the upper tank. Air is admitted to the upper tank, the valve at its bottom is opened and the plastering material falls into the lower tank, where the feed wheel carries it in charges, regulated by the size of the pockets, to the outlet nozzle. Immediately over the pocket, which at the instant is opposite the discharge, is a nozzle so arranged as to form a shield and at the same time to inject air, supplementing the pressure within the chamber and forcing the charge out of that particular pocket into the hose and along it to a discharge nozzle which may be 200 or 300 feet distant. A smaller hose conveying water under pressure is also carried to the discharge nozzle. This nozzle is so arranged as to deliver a spray of water on to the plastering material as it issues therefrom; consequently, the cement is not damped until the instant it is being deposited upon the surface being plastered, with the result that there is no disturbance of the initial set.

Plastering materials are forced on to the surface at high pressure and velocity, with the result that an extremely dense coating is constructed. I have found that with ordinary Portland cement the plastering becomes so hard in two days after deposit that it withstands the blow of the hammer as perfectly as similar plastering done by hand does after a week. The rapidity of the work is such that the exteriors of two ordinary cottages can be plastered per day where the work is straightforward.

I cannot yet give the cost as compared with hand plastering, but by reason of its density and watertightness it is worth more. Some may not like the irregular appearance of the resulting surface; personally I like it.

* * *

Artistic Effects in Painted Furniture

As Americans we are entitled not only to traditions of England, France and Holland, but also to Spanish influence in creating the furniture for our homes. These countries left an indelible impression upon our early architecture and environment.

Few people realize that sixty per cent of the value of a beautifully finished piece of furniture lies in the cost of finishing. Of course, this does not apply to varnish finishes, but to those delightful designs in handmade furniture where the construction of the piece warrants the labor of artistic finishing.

A good example of furniture of a beautiful finish is obtained in some of the new bedroom suites. Delicately tinted flowers, in all the newest shades, adorn the bed, dresser and tiny table and chair.

Where the sun is brightest, there color is most needed. Our gardens give the key to the situation. A breakfast room or sun room is the next step to out-of-doors. Bright fabrics, tile floors and furniture full of inspiration and charm, strike us instantly as appropriate.

Art in Labor*

A Chapter on Responsibilities in Our Social System

By HENRY W. KENT,
Secretary, Metropolitan Museum of Art.

"Art in Labor" is an analysis of a problem in American life which affects the home life of every one of us. It has to do with those domestic arts which constitute home furnishings.—Editor.

THERE is a certain element of the humorous in our discussing the possibility of introducing art into labor, when the colleges and universities, ever regardful of young America, have kicked the oldest of the humanities out of doors. If, however, we believe that matters are ordered for the best in this world, we may nibble as on a crumb of comfort, the thought that while art is one of the humanities, it is a commodity as well. On that score, perhaps, the colleges and universities will admit *it* to their crowded schedules of study, along with journalism, automobile repairing, and other things. Some of us are prepared to argue the matter, but here, among those who stand for art in all of its relationships, I may be permitted to assume the premises in the case, and to devote my time to a consideration of some of the factors responsible for art in labor.

Let us admit that art is a commodity when properly admixed with manufacturers. The French have proved it. They have made it essential to their products. Indeed, they have achieved through it a national style. Greece did the same, so did Rome, so did Italy once. It is not too much to hope that with time we may attain to a general recognition of the value of style, and even achieve a national one. In what is called a melting pot, perhaps our many racial qualifications will get smelted into something resembling style. Heaven knows what it will be like, but it is safe to say that it will be something more than a Beaux Arts facade to a building, or a Louis XV room in household decoration. The responsibility for a national style lies upon no one pair of shoulders, but rests upon us all. No great nation has been without it. A manufacturing nation without it would not be above the machines that make her goods. National taste, then, is a national responsibility. Recognition of this fact would result in training. It is an axiom that to train a people requires that they should be taken in hand when young. This is just as true of training in a feeling for style, or art in manufacturers, or whatever name you choose to give it, as in a feeling for economy or patriotism. There are sporadic attempts to teach this thing in the schools of some cities through what in their schedules of studies is called drawing and Art, and through school room decoration, and in some colleges through what is called the History of Art, but these are not general and are not very seriously recognized or encouraged by the educational authorities or the government. There can not be a general sense of style as a necessity until the need for sound and conscientious teaching of the people when young is understood, and especially until the government takes a part in the matter, requiring such teaching in all public schools and the establishment of art, trade and design schools maintained by the state.

Associated with this movement are the art, trade and design schools, already established, which independently have been grappling with the problem of supplying trained designers and craftsmen to labor. Their problems are peculiar, chiefly owing to the competition their students encounter in the products of the schools of other countries, especially those of France, through the purchase by American manufacturers of foreign designs. Their opportunity to

*An address at the Tenth Annual Convention of the American Federation of Arts.

show whether their training was as thorough and the qualifications of their students as competent as their European rivals' came with the war, when the supply from abroad in large measure was shut off. It may be questioned whether what I believe to be the general practice of design schools in this country of teaching designing without practical rendering and of the trade schools of teaching practical rendering without design are wise ones. But this is their responsibility, and we may assume that it will receive attention since it affects their existence. Much has been made clear by the war which before was seen darkly. Theories may now be measured by more definite rules, such as will hereafter be laid down by those who are competent to express opinions, the manufacturers. Teachnical schools have an opportunity to play a part in manufactures and through them in the national life never imagined as possible before. Perhaps the time may come when the professional designer will be recognized, a measure of honest generosity and justice seldom practiced in this country.

The test of the degree of style possessed by a people lies in what it makes and what it buys. The art sense in purchasing does not lie in what its few sophisticated collectors or its superfluously rich buy. The average home of the man with an average income tells the story. In that home today is found a greater degree of physical comfort—bath tubs, furnaces, electric lights—than ever obtained in the history of the world before, and a degree of aspiration after pleasant things, a striving indeed for "effect," color schemes," "harmonies," and other things in phases of the interior decorator and art schools. There is found, also, a seeking to put into practice the triturates taken from certain monthly publications with pages devoted to art in the home, and more pages of advertisements devoted to art in the shops. I am not meaning to underrate the value of these agencies. They are good. They have done much to encourage a desire for taste in the house, and they have reached many people. Following the old rule for the giving of advice, "First find out what is wanted, and then give it," they have sought to give what they believe would be liked. But they can do better. A liking for pretty things does not constitute taste. Let them set a higher standard on the part of their contributors, especially with regard to the teaching of good and bad styles. A real responsibility is laid upon editor and contributor of such magazines, especially those who serve two masters, advertiser and reader.

I count the responsibility for art of the trade journals, those that serve the trades entire, as one of the greatest in the country today. They exercise a power behind the throne of labor, and upon them depends to a degree unimagined by most laymen, the opportunity for the preaching of the theories of art in trade. Let them add to their staffs people trained in this subject and competent to deal with it.

The present-day interest in objects of decorative art, dyes, and all the things that enter into personal and household furnishings, does not necessarily indicate a growing intelligence in style or manufacturers on the part of the large number of people whom we hear talking about them, but rather a personal interest in their own pocketbooks. European products having been shut off suddenly, people are wondering if the home made substitutes will be as good as the foreign made. There has been magic in the familiar patter of the shopkeeper and the advertiser about "Parisian styles," "London fashions," "French this and that," and "English the other." Such talk is as old as our grandfathers and their colonial importations, reasonable enough then, when "shipments just arrived from London" meant a real supply of what could not be obtained at home, but it is doubtful if statistics would not show that we are producing as much and as durable goods, in quantities sufficient to supply all our people,

as any that ever came out of France or England. Part of our belief in the supremacy of overseas goods is due to a tradition one hundred and fifty years old, part to the thoughtful intention of manufacturers and shop-keepers alike to keep the tradition alive, and part to a real excellence in a small percentage of our imports. A responsibility rests upon the buyer, you and me, to acquaint himself with the market, to learn what an enormous manufacturing people we are, to be intelligent in his demands, and justly critical in his estimates.

It is a fact not to be gainsaid that whatever has been in the past, the preponderance of what is to be bought in this country in the future will be home made by American machinery.

Little bands of well-meaning people have been telling us ever since the advent of the machine in trade that only handmade goods could be really excellent, that they alone had the divine afflatus. The monks told us this about printing when Gutenberg invaded their monasteries and took away the occupation of the scribes; we have been told the same thing with the invention of almost every new machine. Doubtless there is a value in honest craftsmanship, perhaps even it surpasses the machine, but there is no reason why with the same amount of brains it should. "Other days, other fashions." We are dealing with fashions for millions of people.

A few rich people furnish their houses with hand-made furniture, rugs, tapestries, drinking and eating vessels, made in Europe before the machine was thought of. Their treasures, following the rule laid down by Time himself, will eventually be bandied back and forth through the auction rooms, serving a useful purpose as they go in public education in styles, until, eventually, they will find a place in the museums of the future as examples of by-gone arts and industries, models of the taste of their times. To these collectors this country owes a boundless debt of gratitude. Their possessions of documents of such value and such incalcuable potentiality in the formation of taste and the modelling of style in our manufacturers is among the foundation stones in the fabric we are rearing.

It is a good thing to collect admirable things, but it is a far greater thing to make them. This is the era of the machine. It is with machine-made things that the American of today, certainly of tomorrow, must content himself. The matter with which we are concerned is: Are the products of the machine to be good or bad? It is often debated as to whether improvement in the quality of art in American manufactures is to be the best and most quickly effected by the manufacturer himself or by the people. On the principle that a government is just as good as the deserts of the people governed, so taste in manufactures is just as good as the taste of the people for whom the objects are made. The manufacturer makes his goods to sell. If their quality is such that they do sell, he is justified in believing that he gives what is wanted. As a matter of fact, the responsibility, however, for the artistic quality in most of our manufactures lies not with the maker, but with the middleman who buys the goods from the factory and sells to the retailer. He, it is who tells the maker of this and that what the people want. It is his business to gauge the taste of the community and it is his risk that is involved. The manufacturer does as he is told.

If the average of taste, style, art, whatever name you choose to give it, in American-made goods, is low, it is because the average buyer of them is uncritical. As I have said there is an unusual degree of curiosity nowadays about matters of taste. But curiosity alone never accomplished much except bad manners. Something else is needed to lead people to learn to discriminate. First of all it should be generally understood what art is, that art is worth while, that good taste pays. If there be awakened

in the country a sentiment in favor of this, there isn't much doubt but that the manufacturer and the middle man will each try to do his part in the improvement of his output. You can safely leave it to them to do whatever is necessary to that end.

Here is the question, is the middle man competent to judge? His slogan of "giving the public what it wants," is all right if he is beneficient and allseeing enough really to know. But there have been doubts expressed as to this omniscience. It is his responsibility to refute his critics. It is easily done, for by his goods ye shall know him.

It is gratifying to learn that a movement has been set on foot by the National Association of Decorative Arts and Industries to federate manufactures, wholesalers, and retailers, designers, interior decorators and publishers to improve public demand and appreciation for home furnishings.

Doubtless they will accomplish much. Their greatest field for accomplishment, however, lies in their power to awaken the government to a sense of the importance of art in trade, as a national asset. It lies with them to persuade our government to sponsor such a movement as that recently undertaken by Great Britain: The University of Reconstruction in connection with the establishment of the British Institute of Industrial Art outlines provision for a permanent exhibition of British work, plans for bringing designers, manufacturers, and distributors together; a bureau of information to give foreign buyers knowledge of English industries and in general to push art in British industries.

There is another element in the education of the people in art which should be mentioned, which is not the least in its responsibility—the public museum. The history of this institution shows it in the past to have been in a formative state to this end. For years its chief aim was the pleasure of the people and the convenience of privileged classes, then it espied its opportunity to help in the education of the people, and now it is coming to recognize the part it has to play in the labor of the people.

The power of its collections to give pleasure through the transfusion of its objects by labor into other objects is increased a hundred fold. The old theory that objects of art in museums were to be seen and not touched is rapidly giving place to one of use. Visual instruction is good but tactile instruction is better. Demonstration is needed and the museum has seen the need. No single agency today except the government has the power materially to aid art in labor to the extent that the museum has. Collectors of styles, storehouse of design, demonstrator of taste, association of schools, it has a field great indeed.

Some may say—so do say—that this is not the province of art. Such believe that art, like the Lord, "moves in a mysterious way, his wonders to perform." It is doubtful if the Lord does. It is certain that art does not. Art should move in every way it can to help transform the world into a pleasant place to live in. And in this twentieth century it seems clear that one of its most important activities should be a closer alliance with labor. He would be an incurious man who would decline to do his part to bring about this end.

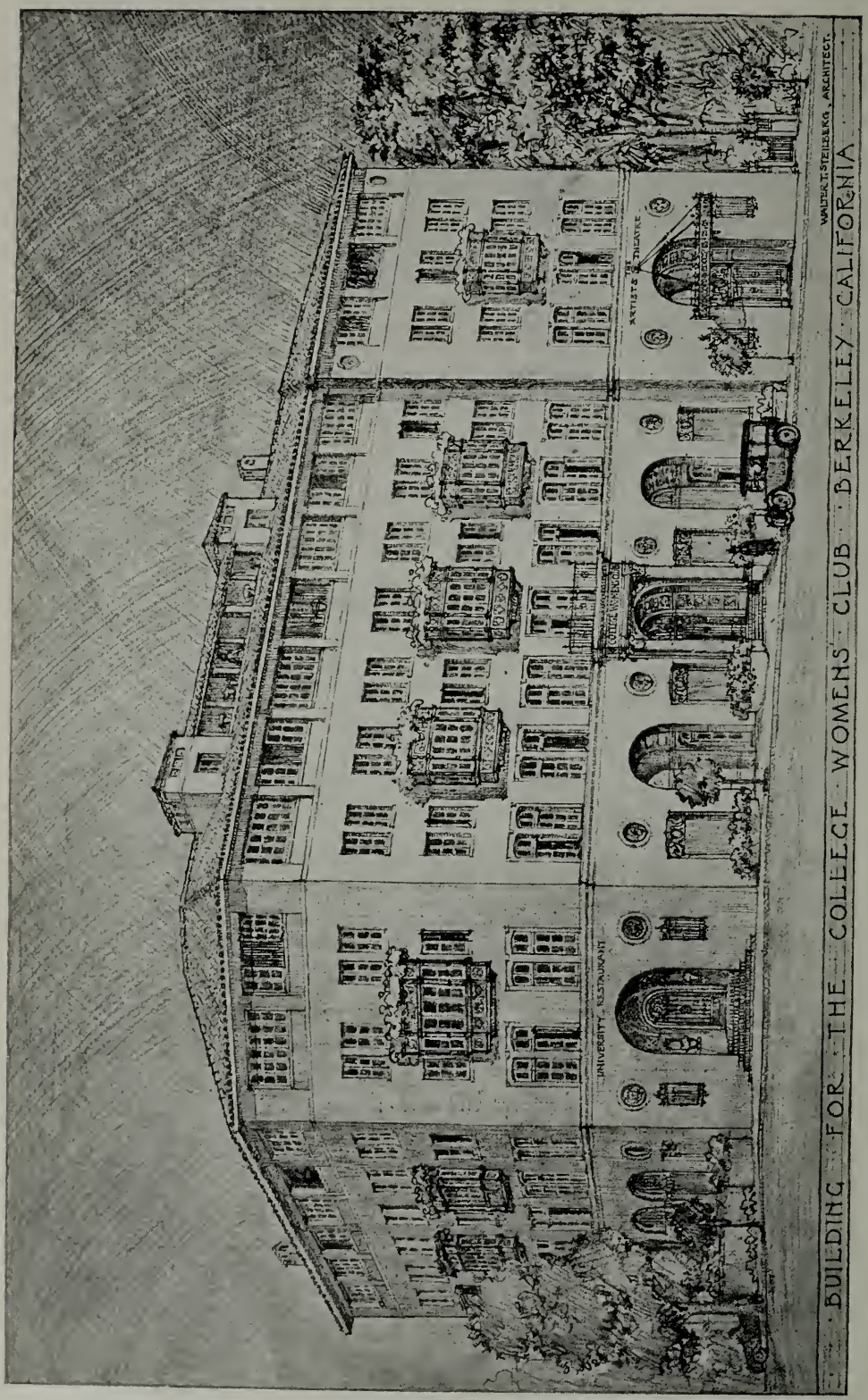
The responsibility for art in manufactures, then, lies upon us all. Everybody's business is usually nobody's business, but in this case, there is a peculiar responsibility put upon a Federation of the arts. It is ours to help bring about a national style, to help to set standards in a public system of education, to encourage home products, and to adopt a broader understanding of them. It may be ours to see art a real power in the manufactures of the country. Who knows?

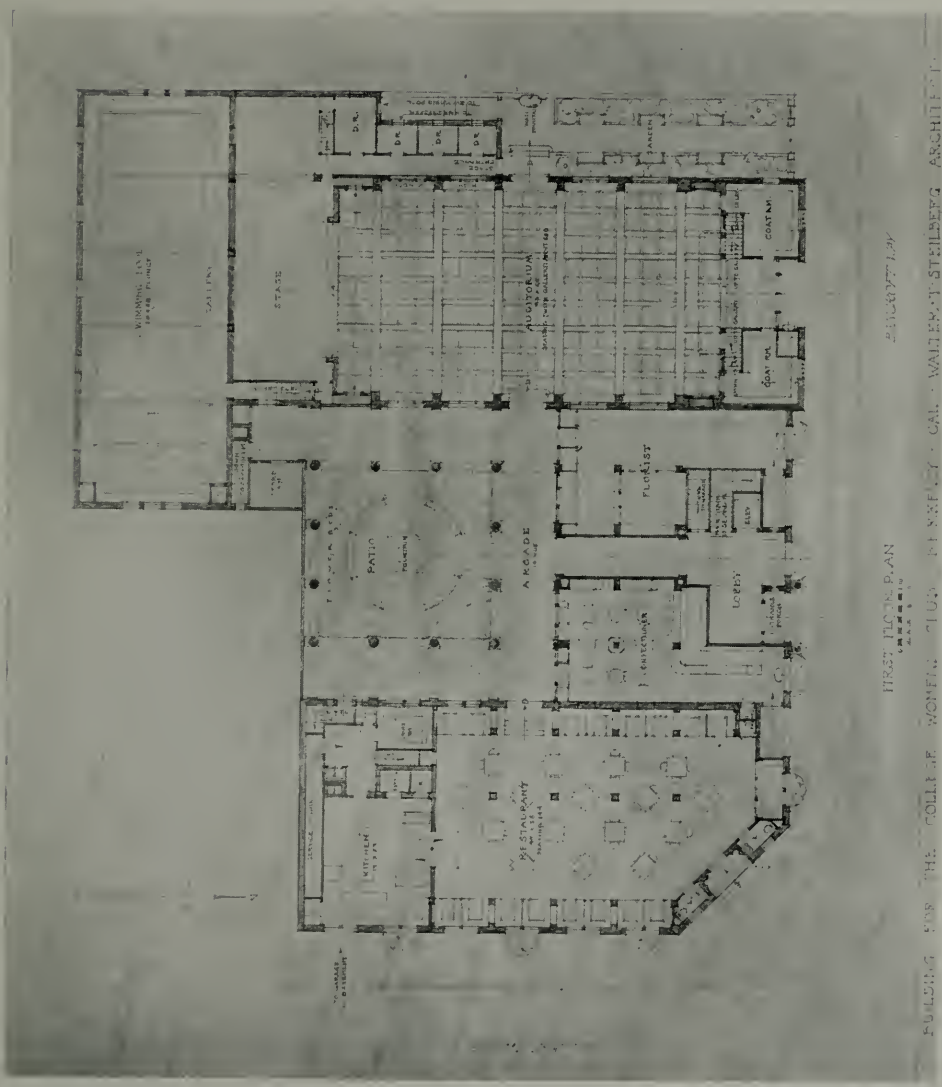
Building for the College Women's Club, Berkeley

THE present property of the club opposite the university tennis courts, at the corner of College avenue and Bancroft Way, is ideal in point of proximity to the university, transportation facilities to the bay cities, nearness to a shopping center, lighting, grades and condition of soil, neighborhood of established character, and assurance of increasing value. The only disadvantages are the lack of space and privacy and rather too much noise. To secure as large a measure of quiet, livableness, and privacy as can be had on such a site is a problem that architects have had to solve for some thousands of years. The Roman architect's solution was a row of small shops in front of the house which was built around a court. The Renaissance architect attained the same end by raising his principal living room to the second story, using the ground floor for service rooms. The design illustrated in the following pages is an attempt to combine these two solutions.

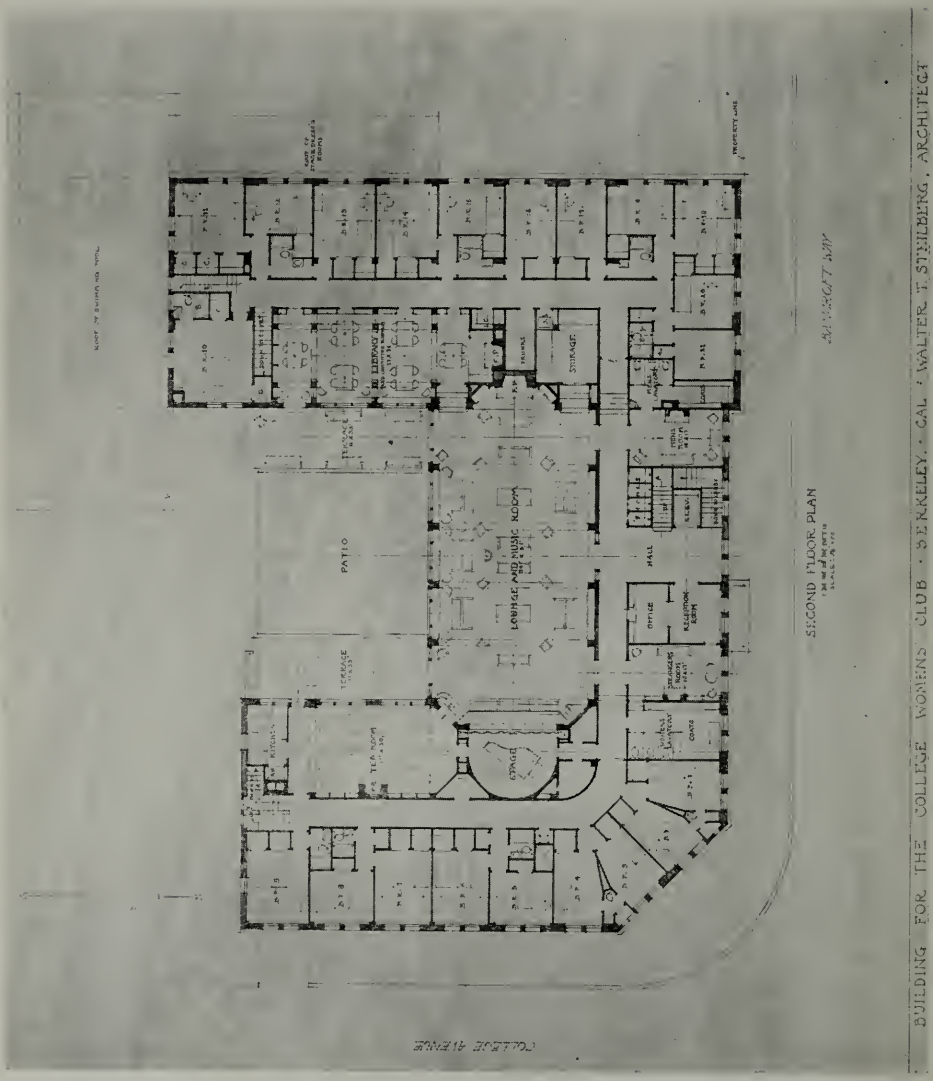
The main five story part of the building is to be built around three sides of a square arcaded court, the open side of the court being to the south. On the first story are a restaurant, two small shops for confectioner, florist, milliner, book or art dealer, and a theater and auditorium, which will be rented as well as used for large meetings of the club. This room is to have a floor carried on pivoted cantilever trusses so that it can be adjusted to a level or sloping position. The principal private rooms of the club, the lounge, library and tea rooms, are on the second floor grouped about this court, with French doors opening upon the terracts above the arcades. In close proximity to the lounge are the office, strangers' room, men's room and coat room, and lavatories for men and women; the remainder of the second floor is devoted to bed rooms with private baths. The third and fourth floors are to be used for small apartments consisting of living room, kitchenette and bath, some of these being provided with two wall beds. The fifth floor is to be a story of bed rooms with baths similar to those in the east and west wings of the second story. All of the bed rooms and living rooms are modest in size, but have a very large proportion of window area. At the back of the west wing on a lower level and approached through a small walled garden are the swimming pool with hair dresser's shop adjoining. In the basement of the east wing and approached from College avenue is a garage housing about sixteen cars. The site of the building slopes in both directions from the corner and the design attempts to take advantage of this condition in the placing of the various accommodations.

The building is to be of fire-proof construction, probably reinforced concrete frame with masonry curtain walls and plaster exterior. The roof is to be tiled. The auditorium on the first floor and the music room on the second are to be spanned by heavy concrete arches, the ceiling spaces between being panelled with mouldings and acoustic felt, on which designs in color will be stenciled. The inner partitions are to be metal lath and plaster. The floors of the corridors and patio arcades are to be tiled, and the floors of the bedrooms and apartments will be covered with battleship linoleum with a composition cove base. The rooms are to be finished very simply with a narrow hardwood trim.


BUILDING FOR THE COLLEGE WOMENS CLUB BERKELEY CALIFORNIA
WALTER H. STEILBERG, ARCHITECT.
ARTISTS' THEATRE
UNIVERSITY RESTAURANT



FIRST FLOOR PLAN, BUILDING FOR THE COLLEGE WOMEN'S CLUB, BERKELEY, CALIFORNIA. WALTER T. STEILBERG, ARCHITECT



SECOND FLOOR PLAN, BUILDING FOR THE COLLEGE WOMEN'S CLUB, BERKELEY, CALIFORNIA. WALTER T. STEILBERG, ARCHITECT

Comparative Costs of Small Houses for 1914, 1920 and 1921

AT THE national conference on the construction industries held at Philadelphia Feb. 15-18 under the auspices of the Industrial Relations Committee of the Philadelphia Chamber of Commerce and the National Federation of Construction Industries, Mr. Daniel Crawford, Jr., an operative builder of Philadelphia, gave an interesting analysis of the cost of the general construction of a typical dwelling. According to his figures a 2-story house of 6 rooms and bath, built in Philadelphia, cost $2,969 in 1914, $8,346 in 1920 and can be built for $6,676 in 1921. These figures, based on an operation of 100 houses, are as follows:

	1914	1920	1921
Ground	$ 500.00	$ 600.00	$ 600.00
STREET IMPROVEMENTS			
1. Sewer	$ 22.50	$ 60.00	$ 60.00
2. Water pipe	15.00	30.00	30.00
3. Curb (plain)	6.00	16.50	16.50
4. Cartway paving	25.00	90.57	90.57
	$68.50	$197J07	$197.07
GENERAL CONDITIONS			
	1914	1920	1921
1. Plans	$ 1.00	$ 2.00	$ 2.00
2. Survey	3.50	5.00	5.00
3. Building permits and affidavits	5.00	7.50	7.50
4. Water permit (brick and stone)	1.80	1.80	1.80
5. Electric service	....	....	....
6. Gas service	....	4.00	4.00
7. Fire insurance on building material	.10	.10	.10
8. Fire insurance on buildings	1.60	3.87	2.58
9. Plant and tools	5.00	15.00	12.00
10. Sales expense	64.00	176.00	144.00
11. Advertising	32.00	88.00	72.00
12. Office expense	29.40	78.60	65.50
13. Compensation insurance	....	7.93	6.80
14. Taxes	11.25	25.00	77.45
15. Interest	101.25	263.00	219.40
16. Title company's charges	69.75	150.25	123.75
17. Deed—Acknowledging revenue and recording	4.00	8.50	5.00
18. Expense—Placing first mortgage	20.00	220.00	108.00
19. Expense—Placing second mortgage	23.00	278.00	125.00
20. Supervision	18.00	36.00	36.00
21. Supplies	5.00	15.00	12.00
	$395.65	$1,445.55	$1,036.18
CONSTRUCTION			
1. Excavation	$ 40.95	$ 99.45	$ 93.60
2. Stone masonry	145.54	408.70	354.42
3. Brick masonry	226.25	703.67	659.71
4. Rough carpentry	255.42	955.41	555.67
5. Finish carpentry	266.00	850.00	610.00
6. Plastering	104.61	385.04	269.42
7. Cement work	83.00	258.54	198.76
8. Cut stone	7.70	16.00	16.00
9. Structural steel	11.80	48.47	33.63
10. Roofing and spouting	50.00	120.00	110.00
11. Plumbing and gas fitting	167.00	545.00	442.00
12. Heating	166.00	440.00	368.00
13. Electric wiring	30.00	81.25	65.00
14. Stairwork	37.50	166.00	125.00
15. Labor—general	25.00	50.00	50.00
16. Tile work	5.50	12.00	9.90
17. Iron fence and clothes poles	17.00	30.00	25.00
18. Sheet metal work	35.00	105.00	85.00

19. Cabinet work	22.70	56.00	40.00
20. Hardware—finish	11.00	35.00	32.00
21. Hardware—rough	11.00	33.00	24.00
22. Painting and glazing	100.00	225.00	215.00
23. Art glass	8.75	15.00	15.00
24. Range and connection	21.50	65.00	65.00
25. Gas water heater and connection	12.00	35.00	26.00
26. Parquetry floor	48.60	143.75	129.60
27. Flue lining and crocks	2.10	8.85	8.85
28. Grading—general	3.15	6.65	6.30
29. Paperhanging and decorating	42.75	110.00	106.88
30. Lighting fixtures	44.25	90.00	85.00
31. Sodding and seeding	2.43	4.85	4.05
32. Numbering houses	.65	1.00	1.00
	$2,005.15	$6,103.64	$4,842.79

SUMMARY

Ground	$ 500.00	$ 600.00	$ 600.00
Street improvements	68.50	197.07	197.07
General conditions	395.65	1,445.55	1,036.18
Construction	2,003.15	6,103.64	4,842.79
	$2,969.30	$8,346.26	$6,676.04
Sale price	3,200.00	8,800.00	7,200.00
First mortgage value	2,000.00	4,400.00	3,600.00
Second mortgage value	700.00	2,500.00	2,000.00

RATES FOR LABOR USED IN COMPILING ESTIMATES

	Per hour 1914	Per hour 1920	Per hour 1921
Common labor	$0.17½	$0.50	$0.40
Carpenters	.40	1.12½	1.00
Carpenters' helpers	.20	.60	.50
Plasterers	.50	1.25	1.25
Plasterers' helpers	.35	1.10	1.10
Bricklayers	.50	1.30	1.30
Bricklayers' helpers	.35	1.10	1.10
Stone masons	.45	1.30	1.30
Painters	.40	1.00	1.00
Roofers	.40	1.10	1.10
Roofers' helpers	.25	.70	.85
Cement finishers	.50	1.00	1.00
Cement laborers	.20	.60	.60
Tile setters	.65	1.00	1.00
Tile setters' helpers	.40	.80	.68¾
Plumbers	.44	1.15	1.15
Plumbers' helpers	.20	.75	.75
Steamfitters	.36	1.10	1.10
Steamfitters' helpers	.24	.75	.75

COST OF MATERIAL

	1914	1920	1921
Foundation stone, per perch	$ 1.40	$ 4.00	$ 3.00
Bricks, per M	7.00	20.00	18.00
Cement, per bbl	1.55	5.25	2.63
Rough lumber, per M ft	20.00	70.00	46.00
Flooring, No. 1 spruce, per M ft	30.00	80.00	60.00
Lath, 4 in., per M ft	3.00	20.00	9.50
Builders' lime, per bu	.25	.70	.64
Calcine plaster, per bbl	2.00	6.25	6.25
Sand, per ton	1.30	2.96	2.30
Fibre, per bu	.25	.35	.35
Structural steel, per cwt	1.40	5.75	4.00
Tin, per box	8.20	22.00	22.50
Felt, per ton	30.00	110.00	85.00
Pitch, per cwt	.70	2.00	2.10
Nails, per keg	3.00	7.50	4.75
Sash cord, per hank	.55	1.25	.85
Tile floors, per sq. ft	.30	1.00	.82½

SUB-CONTRACTS SHOWN BY PERCENTAGE OF INCREASE
(ABOVE 1914)

	1914	1920	1921
Hardware (finish)	Unity	218	190
Plumbing	Unity	226	168
Heating	Unity	165	122
Painting	Unity	125	115
Paperhanging	Unity	157	150
Parquet floors	Unity	195	167
Roofing	Unity	140	120
Sheet metal work	Unity	200	150
Electric wiring	Unity	170	117
Millwork	Unity	215	121
Plastering	Unity	268	158
Gas ranges	Unity	200	200
Excavations	Unity	143	128
Rough stone foundation walls	Unity	208	170
Face stone work	Unity	126	90

Mr. Crawford comments on the above costs as follows:

In 1914 it was possible to buy small lots for dwelling house construction on 40-ft. streets for about $500. The price of the same lot today on a 50-ft. street is a little bit more. I say a 50-ft. street because there has been a general tendency in this community to develop on wider avenues, and the land has been laid out by the surveyors or engineers with a view of getting not less than a 50-ft. street, if possible, so that it is difficult today to find a piece of land that is divided up into 40-ft. streets. So that we have taken the same basic value, and merely added the land that is added, and made it $600 for 1920 and $600 for 1921.

The next item that enters into the cost of construction is utilities—the drainage, the water pipe, the curb, the paving—that the builder must pay for. In 1914 they cost him $68.50, and last year they cost him $197.07. This year the rates are the same. Some folks have said that we are going back to pre-war levels. The first important item that we find is the sales expense of 2 per cent, advertising 1 per cent, and office expense about 1 per cent. Generally, that is the total overhead charge of an operative builder. Four per cent represents his selling expense, his advertising and his office expense. The next item is taxes that amounted in 1914 to $11.25, $85 last year and $77.45 this year.

The next item is interest. You will notice that when a man starts in to build a hundred houses, it takes a lot of money. He must go to a trust company and negotiate a loan, and, of course, he must pay interest on that loan until he repays it to the trust company. We have predicated that charge on 9 months' interest on three- quarters of the cost of the house, the average operation taking anywhere from 15 to 18 months from the time is is started to the time it is disposed of. The title company charges cover title insurance and guaranteeing against mechanics' liens, and searches, recording, and all that sort of thing, which, of course, are perfectly legitimate charges. The next large item is the expense of placing first mortgages. In 1914 we had no difficulty whatever in placing a mortgage of $2,000 on a $3,200 house at an expense of 1 per cent. People were glad to take those mortgages because they were a very good investment. In 1920 the conditions had reversed themselves very much. It was necessary to pay 5 per cent in most cases to place that mortgage, so that the cost of that item jumped from $20 to $220. That condition has been changed this year, and we can place mortgages now at 3 per cent, so that there is run into the expense of building that house a charge of $108. The next item is the expense for placing second mortgages. In 1914 most of the building and loan associations which took the mortgages were in funds, and there was no difficulty in placing that second mortgage by paying the charges of the attorney who represented that association, their solicitor, for drawing the papers, and looking after the settlement, a charge that generally

amounted to $23. But the conditions of 1920 changed materially. It was necessary to pay 10 per cent in 1920 for placing second mortgage loans, and that amounted to $278. That has changed, and we can place them today at 5 per cent, so it is $128. Supervision and so on, is estimated at $18, $36 and $36. The general conditions in the construction of the average small dwelling house rose from $395 to $1,445, and now stands at $1,036.

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Notes on Quantity Survey — Excavating and Grading

By ARTHUR PRIDDLE

THE contract for excavating is a very important part of a building operation, more so than usually accredited to it, especially from the standpoint of the actual excavating contractor.

Usually the estimate is a theoretical guess and the bidding on the work a "take a chance" proposition.

Who can tell what will be encountered in the progress of the work? How can a fair estimate be made on the specifications without an expensive boring operation and even with a careful examination of the property and perhaps with the diviner's rod, it is hard to guess what will be encountered. This has been demonstrated time and again in San Francisco.

With definite specifications regarding clearances, etc., the quantities are easily found by competent surveyors, but the other elements must be covered in better manner to be satisfactory, especially to the contracting excavator.

In the case of excavating, blanket specifications should not be made nor should the contractor take such a wild chance. The work should be based on the usual kind of materials, such as sand or sandy clay or whatever base materials can be agreed upon and allowances should be made for other and more difficult materials to handle.

While it would appear that the cost plus-an-agreed-percentage would be the right course for the more difficult work, it is possible to make an approximate price on the special work, even then the contractor must make allowance for every contingency he can think of.

There is another very important matter to consider in connection with excavating, and that is the extent of backfilling and grading required. Very often the work is divided into three parts: (1) General with the trenches and pits for walls and footings; (2) backfilling after the concrete work is in place and waterproofed, and (3) grading and topsoiling.

The general and rough trenches should be let in a separate contract and the work paid for independently. This will leave the excavator in a position to clean up his work promptly and for less money.

The writer knows of contractors who refuse to figure on such specifications and can name jobs on which bids were not placed for the same reasons.

The backfilling and grading should be taken care of by the general contractor, when and as required and where excavating and grading are the only work under consideration they would better be divided into two contracts.

A little thought by the interested parties—architect, engineer, contractor and owner, will convince each one that the contractor, not being at any such disadvantage as referred to above, can do more satisfactory work and be on a safer and better basis, and leave him in a position to bid closer.

BEFORE REMODELING

AFTER REMODELING. OLD FASHIONED RESIDENCE MADE INTO MODERN APARTMENTS, OAKLAND, CALIFORNIA
Miller & Warnecke, Architects

Is the Old Fashioned Home Giving Way to Modern Apartment House?

THE small cities of the United States are gradually abandoning the old fashioned American home for the modern apartment house, if we are to consider seriously statistics revealed in a report on building operations in this country in 1920 issued by the Civic Development Department of the Chamber of Commerce of the United States. The report was compiled by the national chamber in conjunction with the Federal Bureau of Labor Statistics.

The building figures show that in 1920, 70 per cent of the families provided for got one-family dwellings; 11 per cent two-family dwellings, and 19 per cent apartments in a multi-family dwelling. According to the report, the figures also indicate that the proportion of multi-family dwellings that were provided last year was largest in the small cities which have not had as much experience with this type of habitation as the larger cities. At the same time the report shows that there was more house building in proportion to population in the smaller than in the larger cities. The new accommodations—house or apartment—provided in cities of 25,000 to 100,000 population was one for every 258 inhabitants, while in cities of more than a million population it was one for every 591 inhabitants, and the average for all the cities listed was one for every 350 inhabitants.

It is shown that 1920 was the record year for sale of bath room equipment despite the small amount of new residence building. A great deal of this equipment was used in the conversion of one-family dwellings into tenement houses. The economic and social significance of these alterations, the report says, is of first importance.

A blank soliciting the required building information was sent out to the 288 cities in the country having a population of 25,000 or over. Their total population was nearly 38,000,000. Of these, 131 cities, with a population of 81.5 per cent of the total, reported.

"It is interesting to note," says the report, "that of the estimated one billion forty-three million dollars spent on buildings in 1920 in the cities reporting, more than 36 per cent ($382,307,000) were devoted to dwellings. Factories and work shops came second with 16.8 per cent; stores and mercantile buildings third, with 13.3 per cent; while office buildings and garages tied for fourth place with 8.2 per cent each. Schools, hospitals and charitable buildings together called for 5.4 per cent, or $77,388,000. Amusement places cost more than churches, hospitals or public buildings, the sum being $38,637,000.

"If the rate of building in the non-reporting cities was the same as in those which reported, the total number of buildings in all the cities of 25,000 or more population may be estimated at 195,000, at an estimated cost of $1,280,000,000."

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Cleaning Concrete Floors

"WHAT is the best way to clean a colored cement floor of free lime, and also keep the color looking bright? We put in a red vermillion mineral color floor, and some of it has become dark; other portions show the free lime coming up."

The above question, a prevalent one, was recently put up to Concrete by one of its readers, and the following remedies were offered by experts whose advise was sought:

Oscar R. Smith, testing engineer, Du Bois, Pa.: The free lime coming up, referred to by the correspondent, is known as efflorescence, and is primarily due to excessive porosity. It is caused by moisture bringing the

soluble salts to the surface, and after the evaporation of the moisture these salts are left behind as a white incrustation. This usually consists of calcium sulphate or carbonate, and in some cases alkali carbonates. The proper remedy is to use a richer concrete.

If the floor has been laid for some time and develops efflorescence, it should be cleaned with a very dilute solution of hydrochloric acid, then washed absolutely free from acid and thoroughly dried. Then apply linseed oil, raw or boiled, with which may be mixed some of the coloring matter used in the concrete. More than one coat may be necessary, due to unequal absorption. A few practical tests will indicate the best proportion of oil and color to use to secure the best results. The mineral color will withstand the acid wash.

Some one has suggested using very dilute solutions of sulphuric acid as a wash instead of hydrochloric acid, the idea being to prevent the formation of calcium chloride, which might remain in the pores of the concrete and absorb moisture, and thereby spoil the paint covering.

In place of the linseed oil, the Caffell paraffin process or sodium silicate might be used. Some paint chemist has suggested spraying the floor with carbonated water to convert the soluble lime salts into inert calcium carbonate, after which the floor might be cleaned and treated in any suitable manner.

Toch Brothers, New York City: The condition complained of cannot be remedied until the action of the lime salts has run its course. Anything that might be applied in the way of a surface coating would be unable to withstand the action of the solution pressure that is developed when lime salts are formed in concrete. When this action ceases to be in evidence the surface may be coated with a transparent filler of the varnish type, which will have a tendency to darken the lighter portions of the floor and give a more uniform finish; or a coat of red cement floor paint may be applied as a finish coat over a priming coat of cement filler.

General Fireproofing Co., Youngstown:—The best way to clean colored concrete floors of free lime and keep the color looking bright, is to transform all the free lime into a chemical compound like stone, and render permanently insoluble.

It is quite fully accepted by cement technologists that the commercial portland cement's chief constituent is tri-calcium silicate. When this compound is mixed with water it decomposes, forming a lower hydrated silicate, and a large percentage of calcium hydroxide, according to the following reaction: 2 (SiO_2 3 CaO + H_5O_2 — CaO SiO_2) 5 HO_2 + Ca (O_2H) 2.

Therefore, on the basis of the above reaction, it is determined that 37½% of the weight of the hardened or set cement is calcium hydroxide. It is the presence of this calcium hydroxide that gives or imparts the natural alkaline or caustic properties to a cement surface, and General Fireproofing Crystalrox will act on this material and convert it into a crystalline substance like granite.

Do not confuse this with materials used for washing the surface, composed of chemical solutions of various acids, salts, such as zinc, alum, etc., for the purpose of killing the alkalies, which are unsatisfactory and tend to disintegrate the surface so that it flakes.

M. G. Bennett, Samuel Cabot, Inc:—Something that is of a slightly oil character and yet forming sufficiently hard surface upon drying both to resist wear and prevent the "bloom" from coming up, is necessary to accomplish what your correspondent wishes. We manufacture a floor hardener which accomplishes this, as well as the other purposes of protecting floors from wear and dust.

Wages Here and Abroad

The following comparative rates of wages in the United States and in foreign countries was recently prepared for the Committee on Ways and Means of the House of Representatives:

(In dollars per day at the rate of exchange prevailing for the year shown.)

	U. S.	Germany	Japan	England	France	Spain	Austria
Bricklayers:							
1913	$5.49	$ ...	$0.62	$1.80	$1.54	$ ...	$ ...
1914	5.59	.99	.55	1.72	....	....	....
1919	7.02	.43	1.40	....	....	1.54	....
1920	9.60	.82	1.75	3.29	1.41	....	.55
Laborers:							
1913	2.47	....	.29	....	....	....	....
1914	2.50	.81	.28	1.09	....	....	....
1919	3.86	.41	1.00	....	....	....	....
1920	5.58	....	1.25	2.83	1.06	....	.53
Carpenters:							
1913	4.24	....	.45	1.80	....	....	....
1914	4.33	.99	.43	1.58	....	....	....
1919	6.19	.42	1.10	....	....	1.35	....
1920	8.27	....	1.40	3.23	1.54	2.05	.55
Painters:							
1913	4.04	....	.60	1.70	1.43	....	....
1914	4.16	.92	....	1.47	....	....	....
1919	6.10	.42	1.25	....	....	1.54	....
1920	8.33	.71	1.65	3.19	1.54	1.23	.45
Plasterers:							
1913	5.39	....	.48	1.70	....	....	....
1914	5.44	....	....	1.62	....	....	....
1919	7.06	....	1.25	....	....	1.74	....
1920	9.22	....	1.75	3.29	1.54	....	.64

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Have Sleeping Porches Come to Stay?

According to Mr. Aymer Embury II, architect, New York, the present custom of building sleeping porches on the second floor seems unsettled. Personnally, he does not believe that we, as a nation, have yet determined we want to sleep. He says: "If we are to have sleeping porches for everybody, the sensible thing would be to do away with bedrooms and use dressing rooms only, for sleeping porches, especially when enclosed, become practically rooms, so that the bedrooms have little or no outside air and are dark, stuffy, and unpleasant. For myself, I prefer a well-ventilated bedroom to all the sleeping porches in the world. They are often unsightly, makeshift affairs, but if we are to have them, let us have proper ones, permanently useful, each with its dressing room."—Exchange.

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Open Shop Movement

A national movement in favor of the Open Shop or American Plan in the building industry is being organized and it is reported that a large number of the principal cities have signified their willingness to co-operate in a movement of this kind. Contractors' associations throughout the country have been solicited to join the scheme and are being asked to signify their willingness to attend a conference, to be held in the near future, to further discuss the matter.

The Union of Modern Architecture and Engineering

COMMERCE and industry drawing upon science and art have made the modern office, store, depot, and factory what they are, says a writer in Engineering and Contracting.

Engineering science made possible great and rapid changes, which business quickly appreciated and demanded. Architecture was suddenly confronted with a set of radically new problems—how radical was not at first, and is not yet wholly appreciated. The architects set to work chiefly with the classical materials which they had at hand, and designed structures—sometimes incongruous, it is true, but also frequently in spite of incongruities possessing no small degree of beauty.

New arts do not grow over night, and it is difficult to see how the beginnings of modern commercial architecture could have been other than an adaptation of old ideas to new requirements. But the new structures were unsatisfying —a fact which the architects themselves were the keenest to appreciate. For a time there was much railing against that modernity which replaced the beautiful buildings of the past with the ugly ones of the present; but slowly the new conditions were accepted, and with the acceptance, the determination to work out the best method of meeting them regardless of established usage. Now, while we are admittedly in a transition period, one seldom hears the complaint that the times are architecturally out of joint. Until the transition is much further advanced there will be many mistakes and much of the gawkiness of mid-childhood and early youth; but these also are facts to be accepted—mere incidents in the broad road of progress.

Engineers have all too frequently exhibited a blindness to beauty—sometimes apparently a willful blindness; and architects have subordinated major practical considerations to their own notion of a fitting appearance. But the architects are now enthusiastically taking engineering features with which they once dealt only because of necessity, and are making them into elements of beauty. Broadened views leading to willing co-operation between the two professions will be of incalcuable benefit in developing the new era of structural beauty and efficiency.

Mr. Lewis Mumford, writing in the New Republic of Aug. 3, presents some thoughts on modern architecture which we believe will be of interest. He says:

It has taken our architects and interior decorators a long time to realize that there is a modern style in building, as well as a classic and mediaeval style. By far the greater number of edifices that have been put up within the last hundred years have been patterned in a mold with which neither the current materials nor the methods of workmanship have had very much to do. Our early skyscrapers, for example, were not designed on the assumption that skeletons of steel could reach higher into the air than buildings had ever before reached; they were constructed on the theory that a tall building was a solid pillar, and that it must therefore have a base, a shaft and a capital. As a result of this stuffy misconception years passed before the extravagant aspirations that steel had made possible were even faintly realized in the Woolworth and Bush Towers.

Quite frequently the incongruity between our architectural "styles" and our secular habits is so flagrant as to constitute an aesthetic misdemeanor. Perhaps the best examples of ineptitude are the water fountains in the New York Public Library; from the mouth of the conventional marble lion there spouts, not water, alas! but a patented, sanitary drinking device with a hard nickeled surface. That is the sort of hole in which a classically trained architect finds himself when he begins to fill up his Greek and Roman frame with apparatus designed to meet strictly modern requirements. In the fulfillment of some peculiarly contemporary purpose the modern style has here and there been introduced; and since the difficulty of creating a new structure is not so great when the functions it performs are themselves new, there is nothing strange in the fact that the two main sources of modern style at present are the subways and the cheap popular lunch rooms.

Because our subways and lunch rooms have been constructed with as strict an eye to ways and means and ends as a mediaeval guild hall or a Roman amphitheatre, these modern structures have come increasingly to possess that intelligibility of purpose and that integrity of execution which mark what can properly be called a "style." There is, indeed, perhaps finer promise of a living art behind one of those white-rimmed glass fronts, where white-winged chefs pour white batter upon an immaculate griddle, than there is, for example, in the Cathedral of St. John the Divine, which it has taken so much labor and reconsideration to build. This will very likely seem a malicious paradox to those who fancy that "style" is nothing more than a pleasing superfluity that can be added to or withdrawn from a work of utilitarian art at will—like a sheet of veneer.

Yet Mr. Mumford's enthusiasm does not lead him to unrestricted praise, for he remarks that "we are only at the beginning of a modern style, and the beginning is crude." Of the restaurant which he has just eulogized he says:

From the polished tiles of the white interior comes a frigid glare, and it is difficult not to associate this surgical immaculacy with that of a ward in the better sort of hospital. The cleanliness is, in fact, blatant.

These defects of overstatement have discredited the modern style; they have drawn attention away from the fact that there is a style. Yet here is an equipment, harmonious in almost every detail, which could not possibly have exhibited itself in the world before 1880. If one looks carefully at the floors, the cutlery, the tables, the chairs, and the rest of the fixtures one discovers that there is not an object in the place which is not a machine product. What does that mean? Cheapness, standardization, monotony, ugliness one is perhaps tempted at first to answer; but this is by no means all.

Of its kind every article in the modern lunch room is excellent, and its excellence is due to the fact that it has been made by a machine, and that it exhibits the accuracy, the fine finish, and the unerring fidelity to design which makes machine work delightful to everyone who knows how to take pleasure in geometrical perfection. If there are no surprises in a modern scheme of decoration and equipment there are likewise no disappointments.

To create designs which will respect the logic of the machine and at the same time have regard for the vagaries of human psychology is the problem whose solution will give us a satisfactory genuine modern style.

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In Favor of the Architect

THAT an architect in charge of the construction of a building has a right to reject unfit material furnished by a sub-contractor for the construction of concrete forms is the decision in a recent Washington case, says an exchange.

It was contended in this case that there was no lien for the value of lumber used in making concrete forms because the lumber did not become a part of the finished structure, and it was provided in the contract that the concrete forms were to be constructed and removed, and thus the concrete forms should be classified just as tools and appliances to facilitate work are classified.

The court refused to adopt this view, however, saying:

"The use of concrete in modern building operations has become so common that we may almost take judicial notice of the fact that buildings are no longer erected without the use of it, and that from lumber when once used is stained, warped, wired and coated with cement so that it is no longer a commercial commodity and is to be classed as waste. We see no more reason for rejecting form lumber as a subject of lien than we would have for refusing a lien for false work erected to sustain an arch or floor."

Theatre Seating—Past and Present

By A. F. FLEMING*

WE HAVE to go back to Nature for the beginnings of all things and this is as true of the origin of modern theatres as of everything else. We find that the first theatres were nothing more than an encircling hillside, offering a convenient vantage place from which to see—which is exactly what theatre means, a place to see—the religious rites of the chorus in the orchestra pit or platform beneath. The stage was nothing more than a raised platform or pulpit for the individual actors to declaim from, and the original "green room" was but a crude tent, or "scene," as the Greeks called it, to the side of this platform.

The theatre seating engineer of those days was more of a quarryman and stone-cutter than construction engineer and architect as today. In the famous theatre of Dionysus, underneath the Acropolis in Athens, some rows of seats were carved out of the solid rock of the hillside itself. In fact, he had to be a sculptor as well, for we have some beautiful examples of theatre seats that are marvels of sculptural design.

The Romans, through their perfecting of the principle of the arch, were able to achieve the amphitheatre effects of the Greek hillside in the very midst of their cities and on level ground, as witness the beautiful amphitheatre unearthed at Pompeii and the magnificent Coliseum in Rome itself. These have been the marvels of architects and engineers of all times.

Modern Theatres

What the principle of the arch accomplished to meet the Roman needs, the wonderful achievements of steel construction have accomplished for us in the theatres of today. The old lady in "Punch," who in her motor tour around Rome had suddenly come upon the Coliseum and thought it must be the ruins of "some cinema or other," was, after all, not so far off. For our modern theatre, with its balconies and galleries and its seating capacity running into the thousands is quite a direct development from the structures of that day, using modern material and meeting modern needs. While it is a far cry from the hillside theatre of the early Greeks, it is a direct descendant of it.

The real development of the modern theatre structure, however, has come only within the past fifty years with the rapid development of steel and concrete construction.

Our climate conditions, differing so completely from those of Greece and Rome, compel us to put our theatres under roof, and because of the importance of the spoken word, we have had to bring our "hillsides" as near the stage as possible, by means of our really very wonderful overhanging balconies and galleries.

It is this quiet complex structure of the theatre of today that makes the task of the seating engineer as difficult as it is important.

Theatre Seating Today an Engineering Problem

To the lay mind and even to the practical theatre manager, theatre or opera seats, as they are sometimes called, are merely considered as furniture. But the real test in the production and installation of theatre seating is in the engineering skill and architectural knowledge rather than in the ability solely to produce good furniture. The experience, equipment and skill to manufacture the seating is, in fact, the lesser requirement of the two. Theatre seating is in reality a very highly specialized industry.

*Theatre Seating Engineer, C. F. Weber & Co.

To equip a theatre properly with seating, the engineer must first of all be thoroughly conversant with the uses to which the particular building is to be put. Having determined that, a seating diagram or lay-out is made to insure the maximum seating capacity consistent with comfort, safety, facility of entrance and exit, compliance with local or state building requirements, proper site lines, elevations and other mechanical adaptations and adjustments.

The seating must be determined upon the basis of the above things and also in conformance with the general architectural and decorative scheme and further in proportion to the invested capital of the building as a whole.

In the second place, every man, woman and child must have direct and open vision to the stage, for that's what he pays the money for at the box office.

The sloping and terracing of the floors and the curvatures of balcony and gallery are, of course, intended to facilitate this. But unless the seats are specially made to meet the requirements of each and every part of the house, these avail but little. For so greatly do theatres vary in plan and design that the seating construction problems that enter here must be solved individually for each theatre, hall or auditorium.

Adapting Seats to Floor Plan

The relative length of chair legs, front and back have to be so adjusted as to conform evenly to the slope of the floor and still keep the chair in its normal position. Then only can the occupant be assured of a natural, easy, comfortable position in sitting, being neither tilted too far forward, nor too far back. His feet and those of the chair should rest very naturally in exactly the same line or plane.

Where there are sloping sides toward the center, a two-fold problem presents itself. Not only must the inclination toward the front be right, as explained above, but there must be a mechanical adjustment in the fastening of seats to standards (supports) so that the seats will be perfectly level and parallel with natural floor level and the sitter will not be tilted at an angle —a position bound to be uncomfortable and annoying. A special patented construction makes this adjustment quite simple and easy.

The necessary converging of seats from the outer circumference toward the stage, both on the main floor and in the balconies, offers still another problem to your seating engineer. For not only must there be no loss of chair space and resultant decreased capacity, but the symmetry and the general pleasing and orderly appearance of the house must be preserved.

Furthermore there must be no crowding of seats at any point to the discomfort of the theatre patron. A very simple variation in the form of seat-hinges (an invention), operates to solve this difficulty very easily and efficiently.

The placing of the chairs in rows and the arrangement of the aisles, to make ingress and egress as easy, speedy and safe as possible and to conform in every way with the building and fire ordinances of each community, is another important point requiring the most careful thought and planning. Oftentimes, too, a very simple rearrangement makes possible an appreciable increase in house capacity, and if not actual increased numerical capacity, actual increased box office capacity by transforming otherwise less desirable and less valuable seats to a higher grade of valuation and desirability.

Increased Profits From Scientific Seating

Increases of from 10 to 20 per cent in box office gross value, are not uncommon through expert and careful replanning and rearrangement of seat-

ing. Every theatre manager appreciates the increased profits to be realized even on a small increase in the gross capacity of his house. When multiplied by the total number of performances in the year, it amounts to a considerable sum.

With the larger engineering problems of seat arrangement and placing solved, comes the consideration of the seat itself. The importance of this feature is well emphasized by that great authority on the theatre and theatre management, Robert Grau, in his work, "The Stage in the 20th Century."

America Leads in Luxurious Theatre Seating

In this he says: "The designing and building of opera chairs as exemplified in the seating of our finer metropolitan playhouses has developed into a truly scientific and decorative art. A distinctive feature of the magnificence of furnishings of the modern American opera houses is the luxuriousness of the seating.

"At least as important as these artistic features, however, is the consideration of comfort. To enable a large audience to rest at east during the length of the play is of vital importance. In the design and construction of the opera chair, this is a point that should demand paramount attention, and the principle applies both to the more elegant upholstered chair and the simpler type, with built-up wood back and seat, such as is commonly used in the smaller houses, moving picture theatres, and the galleries of our metropolitan opera houses."

Comfort a Paramount Consideration

Next to a clear vision to the stage, the patron's first consideration is his own personal bodily comfort.

Roominess, spring seats, smooth, well upholstered backs, correctly placed side arms, smoothly operating and noiseless seat-hinges, a perfectly level placing with relation to the floor, serviceable racks, anchorage firm and unshakeable, no loose parts to annoy, no sharp out-jutting points to catch and tear the clothing, all these are elements of comfort that should be provided for.

If comfort is the patron's first consideration and so has its direct bearing on box office receipts, and the house's popularity and success, of equal importance to the theatre manager are the built-in qualities of the chair itself, the strength and durability of its materials and the scientific and painstaking skill with which it has been constructed.

Strength, stability, durability, must all be there as surety of a long, uninterrupted span of usefulness, and as proof against costly delays and loss from breakdowns and repairs. A broken seat brings in nothing at the box-office, means additional expense besides, and is a decided annoyance to patrons. To withstand successfully years of constant use, especially in the moving picture and vaudeville theatres of the day, theatre seats must be scientifically constructed of the very best materials procurable and must be strong and fool proof in every detailed part.

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To Paint a Brick Wall

In a brick wall which is to be painted the old mortar has dropped out in some places. The American Paint and Oil Dealers Journal advises the use of stucco mixed with very thin glue size, say about two ounces of glue to a gallon of water. Mix only a small quantity at a time as it sets quite rapidly, though, not quite so rapidly as stucco mixed with clear water. This material has no effect upon paint or color put over it.

Inclined Driveways for Garage and Factory Buildings

THE d'Humy Motoramp System is offered as a solution of the problem of inter-floor transportation, possessing marked advantages over the usual type of ramp. It may be used in factory buildings of all classes and also in automobile and motor truck sales and service buildings and garages. It is almost as compact and economical of space as an elevator installation, but affords all the advantages of a ramp construction.

The notable features of the d'Humy System are obtained by the use of a staggered floor building in which the structure is divided into two vertical sections, the floors in one section being placed half way between the floors in the other section. Because of this modification the ramps rise a half story at a time instead of a full story. This in itself is an important advantage because it reduces the ramp length by one-half and,

THE D'HUMY MOTORAMP SYSTEM FOR GARAGES

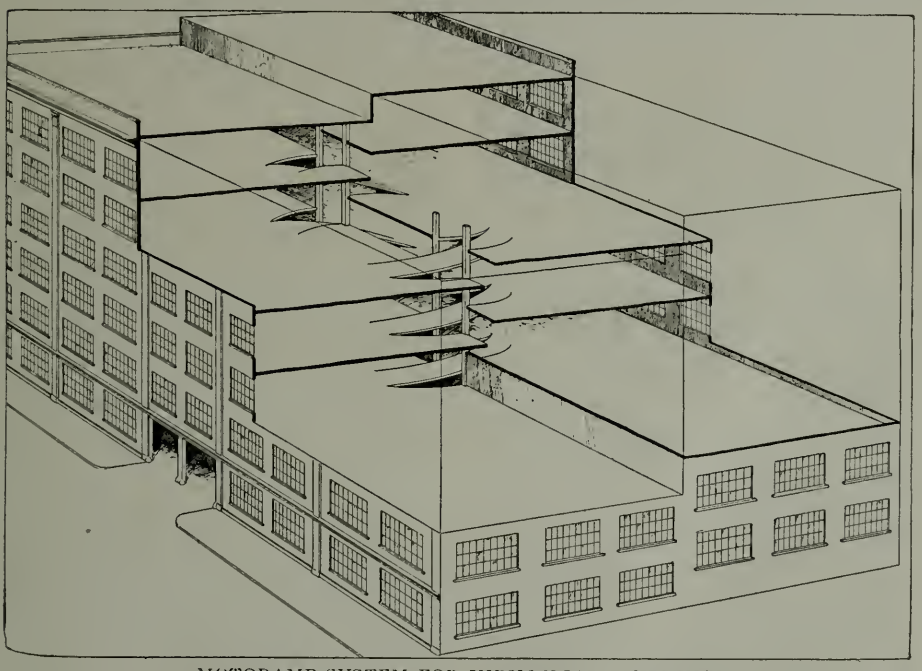
consequently, the location of ramps in any building is a much more simple problem than where full length ramps are employed. The ordinary ramp is so bulky that it is invariably difficult to place it so that it does not interfere in some way with the best building layout. The short ramps employed by the d'Humy System, however, remove this difficulty. The location of these ramps offers no particular problem at all.

The high space economy of the d'Humy Ramp System is obtained by virtue of the fact that the ramps are merely connecting passages between the two sections of the building. In a building of ordinary construction connecting passages would be required and in the d'Humy System these also function as ramps.

Because of the compactness and high space economy of the system, d'Humy ramps are valuable for use in factory buildings, whereas ordinary ramps are out of the question.

The flow of material in the multi-storied factory building is usually from the top floor to the first floor. With the d'Humy System it is feasible to place the raw material stockroom and the stockroom for semi-finished parts on the top floor, transportating the material directly to this floor by motor trucks or, if it is not deemed desirable, industrial trucks may be used. Raw and semi-finished material is taken from the top floor and put into production, being transported down through the building by means of the d'Humy Motoramp System on industrial trucks. By the time the first floor is reached the product is ready for shipment. In a great many cases this patent Motoramp System will provide the most convenient and economical method of maintaining the flow of raw material and finished parts throughout the factory building.

The manufacturers of various types of industrial tractors and industrial



MOTORAMP SYSTEM FOR INDUSTRIAL BUILDINGS

trucks state that their vehicles are capable of pulling a load up a 10 to 15 per cent grade without difficulty and that they are, therefore, suitable for use in connection with the d'Humy Motoramp System.

Comparative figures readily show the advantages to be obtained by the use of the d'Humy ramp in a building 100′ by 100′. For example, if any space is devoted to inter-floor transportation, fifty-two cars may be accommodated. With the ordinary ramp this number is reduced to forty-six. With the elevator the number, in most cases, is the same as for the d'Humy ramp. Figures for other sizes of buildings are given below:

Building Size	Number of cars that can be stored with:			
	No inter-floor transportation	Single d'Humy Ramp System	Ordinary Single Ramp System	Single Elevator
100x100	52 cars	50 cars	46 cars	50 cars
100x150	80 cars	75 cars	72 cars	78 cars
120x300	170 cars	168 cars	160 cars	168 cars
	132 cars	130 cars	120 cars	130 cars
150x150	120 cars	118 cars	110 cars	118 cars

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THE ARCHITECT'S ATTITUDE TOWARD THE MANUFACTURERS' AGENT

It is interesting to note the difference of opinion architects entertain toward receiving manufacturers' agents and material men. Some seem pleased to greet them at any and all times; others set aside certain days and hours for receiving them, while a few (and we are gratified that there are only a few) peremptorily refuse to be "bothered," going so far as to post notices on their office doors in effect that they have not the time or patience to listen to the peddlers; that he (the architect) knows what he wants and where he can procure it without outside interference or suggestion.

Mr. Charles Cressey, a California architect, writes for the National Builder some pertinent thoughts on this subject from the viewpoint of an architect, and he is inclined to treat the matter in a liberal and fair minded manner. Mr. Cressey says:

There are signs that pre-war methods for introducing specialties by personal calls on the executive heads of building work, are being resumed, with the prospect of many pleasant reunions and new friendships, no less welcome to the architect than to the man of grip and sample. As a system, however, I doubt if any other feature of salesmanship can match the average promiscuous call on architects, for sheer waste of time and effort, hard thoughts and at times occasional hard words, where the caller butts into the called-on when he is "not at home." After many well meant efforts to do justice to the traveling man, the happy-go-lucky way of interviews prevails and most likely will continue. Set reception times seem to restrict the freedom and range of the agent's movements and the architect rarely finds it possible to stay with the schedule.

There can be no question that the personal explanation of new or improved products is a desirable thing well appreciated by the architect, and the welcome to well posted specialists will be increasingly spontaneous, as the business missionary becomes recognized for educational work distinct from order seeking. The fact remains, however, that the man most desirable to be seen is the one with least time to spare. Few callers know the many expedients forced upon the busy architect in the effort to get pressing work done, or appreciate that this profession does a scandalous amount of overtime in meeting the urgency of most modern building projects.

I was several years in discovering that a friend of mine had a cunningly contrived "padded cell" for retreat at busy times, and another man systematically worked all night hours preparing for his draftsmen, devoting only a little time of each morning to his office. For reasons similar to these, this is the day of indirect advertising, to which the personal introduction is supplemental. In fact nothing insures a reception for representatives so readily as the informative features of current advertising, particularly if the man also can be expected to carry a progressive message unrelated to pure boosting for the goods of his firm. One of the perpetual problems of an architect (and others, too, probably) is to secure **uncolored facts on specialties, particularly in the way of limitations.** The architect is peculiarly placed in spending another man's money in a way which must in the end entirely satisfy the other man. This brings me to a picking from my peck of potted paragraphs—not so very youthful at that—which gives the emphasis of the law to a common-sense fact, "that the architect has no right in law or reason to **experiment** with the money of his client." That answers clearly the accusation that architects as a class are against new

things. The humorous side to this, is the fight with himself that the poor man must go through to avoid using attractive but comparatively unproven specialties. The human brain seems to be incapable of complete foresight, and the record of new specialties for buildings is a stream of unexpected imperfections (and some perfections) which only time and practical use can uncover.

Answering the obvious question as to where and on whom shall new things be tried, I can only suggest some place where the responsibility for the unexpected, rests squarely on the shoulders of the firm behind the product. It must be the future phase of business to back new things with an easily negotiated guarantee, not merely on the product itself, but in making good the incidentals affected, which are often of far greater moment than the specialty. Take defective special plasters, paints, waterproofing, roofing and so on, where the return in full of the cost of material guaranteed is trifling in comparison with the replacements, inconvenience, friction, and side-issues developed in making good the defects. The building interests are tremendously indebted to the pioneers who have in the past and are now refining and proving the worth of new products. Within the past decade there has been no small tendency to disparage time honored ways of building in the enthusiasm for something different, just as at present there is perhaps a reaction running towards old effects and finishes, with the specialty man cheerfully helping to prove that beauty may be only skin deep.

Our real work therefore is to check false tides and fashions, and aim at permanent design and progressive building irrespective of ancient or modern classifications. The specialty man can, I am certain, go ahead with assurance in his efforts to modernize old or develop new products.

ELEVATOR SAFETY ORDERS

There is nothing mysterious or hidden about hazards in vertical transportation. The ills are readily diagnosed and conceivable disastrous consequences may be avoided to a great extent through a judicious expenditure of effort and money in the provision of modern safety appliances.

The Industrial Accident Commission of the State of California has given early recognition to the danger element in the operation of elevators. The Elevator Division is one of the most efficient operating units of the Safety Department and its work is producing tangible and lasting results.

The first issue of the elevator safety orders took place in October, 1916. A revision was completed and given effect in April, 1918. Every interest in the state that is in any way concerned with the operation and maintenance of elevators was given adequate representation on both the original and revision committees. As the safety movement gathers impetus and gains in prestige and recognition, it is obviously of primary importance to keep pace with modern progress and give application to the lessons learned from experience, and so the elevator safety orders are undergoing new revisions and the revisions committee will again be called upon to co-operate and advise with the commission's engineers.

In the effort to reduce elevator accidents the architect is privileged to co-operate largely and effectively. He is primarily responsible for the design of hatchway, penthouse and pit, three prolific contributors to accident statistics. If he fails to construct the hatchway with a view to the elimination of shears or to design hatchway and pit with ample provision for clearance and depth it is rarely possible without incurring a great deal of expense to remedy these conditions after the erection of the building.

The Industrial Accident Commission is anxious to have the architect well represented on the Revisions Committee of the Elevator Safety Orders, and appears to be making every effort to secure reasonable safety requirements to govern the installation and operation of elevators.

Notes and Comments

Future Prices of Construction Materials

The price level of building materials, other than steel, averaged in June about 100 per cent above the average in the year 1913. The general level of wholesale prices of all commodities was about 50 per cent above the pre-war level. Price and wage levels are proportional to the per capita money, and per capita

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money is 60 per cent above the pre-war amount. Hence we may confidently look for a new wage and price level about 60 per cent above that of 1913. But in doing so it should be remembered that certain commodities will probably remain below the new level of 160, whereas others will remain above it. There is a tendency for the price of any commodity to seek the general price level, but each class of commodity is affected by economic forces that differ from the average.

Labor, fuel and freight enter into the cost of building materials to a greater extent than is the case with most products. Fuel is high (87 per cent above the 1913 level), and will probably remain high for about a year, because of the long time agreement with the coal miners as to wages. Freight is high (about 80 per cent above the 1913 level) and will remain high for several years, not only because of the extraordinarily high wages paid to the railway employes, but because railway rates were much too low prior to the war.

For these reasons it is evident that cement, brick, crushed stone, sand, etc., will remain relatively high.

But other conditions are operating to hold building materials up, comments the editor of Engineering and Contracting. There is only a very small stock of building materials on hand, and there is a very great latent demand due to the subnormal construction of the past five years. These were the conditions existing at the close of our Civil War, and they resulted in maintaining a price level of building materials from 70 to 100 per cent above the level of 1860 for a period of 8 years after the war ended in 1865, despite the decline of prices of other commodities. In fact it was not till 1892, or thirty-two years after the Civil War ended, that the price level of building materials returned nearly to the level of 1860; even then it was 12 per cent above the 1860 level.

There is another significant fact about the price levels of building materials. In 1860 the level of building materials was 55 as compared with 100 in 1913; whereas the price level of all commodities was 90 in 1860 as compared with 100 in 1913. In other words, the average price of building materials increased nearly 90 per cent in that period of 53 years, whereas the average price of all commodities increased only 10 per cent. What does this marked difference signify? It indicates, we believe, a smaller per cent of increase of efficiency in the industries producing building materials than in other industries. Also, it indicates an increasing length of haul of building materials to the wholesale markets. We know that the average distance of haul for lumber has increased greatly in the last 25 years, and that, with the gradual exhaustion of the timber supply, it will continue to increase.

There has been a great deal of recent editorial criticism of "combinations in restraint of trade" in the building field. We wonder whether many editorial writers realize that some sort of restraint is economically necessary. Unrestrained competition is economically injurious in any business, as nearly every contractor can testify from bitter experience. The efforts of manufacturers to secure protection from foreign competition are evidence of their belief that unrestrained competition may be ruinous. Without going into the subject of the economic ills and benefits of competition, it will suffice to say that too much competition may be almost as bad as too little.

Lopping Off a Few Tax Burdens

A half billion cut in taxes seems to be assured as the result of agreement reached in conference between President Harding and Republican leaders of the House to effect sweeping slashes in appropriation estimates. A program has been framed which cuts $495,000,000 from the treasury estimate to be raised by internal revenue. This program, it is thought, will render unnecessary the levy of a ten dollar tax on automobiles, and the two cent tax

on bank checks. The flat tax on corporations which will be raised to take the place of the excess profits tax will probably be 12½ per cent or perhaps 15, and the $2,000 exemption will not be abandoned.

One of the agreements of the conference was that the idea of making the revision of the income tax law effective for calendar year of 1921 shall be adhered to. This would mean the repeal of the excess profits tax as of January 1, 1921. The program calls for the cut of transportation taxes in half on January 1, 1922, and repeal entirely on January 1, 1923. There is possibility of total repeal at the earlier date.

The cut in expenditures includes $350,000,000 from various departmental appropriations, including those of the war department, the navy, and the shipping board and $150,000,000 in public debt expenditures.

The saving in public debt expenditures will be brought about by carrying for another year $100,000,000 in maturing war saving certificates and deferring payments under the Pittman silver act. The estimate of $545,000,000 expenditures for the railroads during the fiscal year was cut by $50,000,000.

Taxes have been eating the "pep" out of industry and a promised let down in the burden in itself puts courage into business. Let the program become actual reality, urges the American Contractor—take off the excess profits gas mask and let the patient breathe—reduce the burden and a powerful impetus is given to the faint throbs of increasing activity which industrial experts claim they can hear even now.

Fire Prevention Day

Every man, woman and child in the United States suffers either direct or indirect financial loss because of the seemingly unbridled advance of our national fire loss. Considerably more than $300,000,000 goes up in smoke every year.

This is but one item of the loss. There are on an average 18,000 human lives lost, while some 60,000 persons suffer bodily injury in varying degree. Because of our fire worshiping habits, extensive fire departments are necessary. Fortunately most of these are wonderfully efficient, yet due to the fact that we have never established fixed habits tending to materially reduce this fire loss nor persistently waged effective education to the same end, the cost of our national annual bonfire is many times greater than the figures usually published as representing this loss.

For a number of years it has been the custom to in some fitting way observe October 9 as Fire Prevention Day. This date has been generally accepted for such observance throughout the country because it is the date of the memorable Chicago fire in 1871. Frequently a week's program is arranged in the larger cities and suitable exercises designated for each day of the week.

Tens of thousands of people know that buildings can be built that will not burn. Architects, engineers and contractors know how to design and build such structures. Everyone realizes when he has been the one to suffer most from fire that there were one hundred and one neglected precautions which he might have taken to prevent or minimize his loss.

Fire Prevention Day and Fire Prevention Week have become too prosaic. Not only must we celebrate the day or week, but also observe the teachings the occasion presents. There should be 365 fire prevention days and 52 fire prevention weeks each year.

Personal

Mr. T. E. Stanton has been appointed chief assistant highway engineer by Mr. A. B. Fletcher, director of the state department of public works. Mr. W. S. Caruthers, who has been with the Sacramento county highway commission for more than a year, has again joined the state highway organization.

Mr. R. W. Kinne, formerly with Willis Polk & Co., is now associated with Mr. Aleck Curlett in Los Angeles. Mr. Curlett will be remembered in San Francisco as son of the late William Curlett, who was one of the pioneer architects of the bay region.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Masonic Home Competition

Five San Francisco architects have been invited to participate in a competition for a plan for the future enlargement of the California Masonic Home at Decoto, near Niles. The initial expenditure will be $250,000. The architect whose scheme is judged to be the best will be commissioned to prepare working plans for the improvements and he will receive the usual six per cent for his services. The other competing architects will each receive $400 for their efforts. A jury of two architects and three members of the Masonic Home building committee will pass on the plans October 6th. Mr. Sylvain Schnaittacher will be the architectural adviser. The architects competing are Messrs. William Mooser, P. Righetti, J. W. Dolliver, B. J. Joseph and Carl Werner, all of San Francisco.

New Work in Mr. Knoll's Office

Architect A. H. Knoll, Hearst building, San Francisco, reports being busy on the following new work:

Preliminary plans for a five-story brick apartment house at Marysville to cost $75,000.

Alterations to the Hotel Pontiac at 138 Sixth street, San Francisco, to cost $7,500.

One-story reinforced concrete store building at Tenth avenue and Clement street, San Francisco, to cost $18,000.

Country house near Cupertino for Mr. Antone Rulfs to cost $12,000.

The above work is in addition to three apartment houses which Mr. Knoll has under construction, a flat building for himself, and several small residences.

Contract for Los Angeles Building

The Clinton Construction Company of San Francisco and Los Angeles, has been awarded a contract at $64,000 to erect a three-story and basement class "A" loft building on Sixth street, between Broadway and Hill streets, Los Angeles, for the South Broadway Building Company. Mr. Edwin Bergstrom is the architect.

San Francisco Building Outlook

After one of the dullest building periods in the history of San Francisco, extending over four months and due to labor controversies, the first of this month witnessed a resumption of construction work which bids fair to exceed in volume any previous record since the fire of 1906. With the "American Plan," or "Open Shop" in operation, the several million dollars worth of buildings that had been held up is now going forward with a rush that augers well for the future. Architects report a vast amount of new work on the boards, including office buildings, apartment houses and residences. There are also prospects of renewed industrial activity, while five or six large theaters and as many churches are projected for San Francisco, Oakland and Berkeley. School work which has been delayed will also go ahead and the banks are showing a disposition to make loans. It is believed that inside of another month there will be twenty million dollars worth of new buildings under construction in San Francisco and the bay district.

Berkeley Residence

Architect W. H. Ratcliff, Jr., First National Bank building, Berkeley, has let a contract to Mr. Walter Sorrenson to construct a large two-story cement plaster residence in Claremont Court for Mr. Fletcher Ames for $16,500. Mr. Ratcliff is preparing plans for a $10,000 home to be built at Cedar street and Euclid ave., Berkeley, for Mr. C. A. Kingsley. A contract has been awarded by the same architect to Connor & Connor to build an eight-room house in Alameda for Mr. J. M. Sandoe for $12,850.

Designing New Apartments

Architect J. F. Dunn, Phelan building, San Francisco, has been commissioned to prepare plans for two new apartment houses for Mr. S. Rouda, one of which will be a four-story structure on the south side of Geary street, between Leavenworth and Hyde streets, San Francisco.

In Architect Petersen's Office

Plans are being completed by Architect Jens C. Petersen, Peoples' Savings Bank building, Sacramento, for an $80,000 6-room and auditorium school building at Arbuckle, and for two large commercial garages which have been leased to Dodge Bros., one to be built at Newcastle by Mr. N. C. Reeves, and the other at Roseville, Placer county, by Mr. Joseph Hawkins & Son. Each garage will cost $25,000.

Additions to Berkeley Apartments

Mrs. Mabel H. Chandler, owner of the property at Telegraph avenue and Dwight Way, Berkeley, has had plans prepared by Architect Clay N. Burrell, First Trust building, Oakland, for additions to a one-story brick store building, which will provide twenty-two high-class apartments. Construction will be in charge of Mr. F. A. Ernsberger. The estimated cost of the improvements is $60,000.

Designing Racing Bowl

Architects Glass & Butner, Hearst building, San Francisco, are preparing plans for a frame racing bowl for automobiles and motorcycles to be built at San Mateo for the San Francisco Speedway Association. The same firm is also preparing plans for a $300,000 plant at Fresno for the California Peach Growers and Fig Growers Association.

Eight Story Apartment House

Ground has been broken on a splendid marine view lot facing Lake Merritt, Oakland, for an eight-story reinforced concrete apartment house of forty apartments, for Mr. P. A. Palmer and associates, from plans by Architect Willis C. Lowe, Monadnock building, San Francisco. The improvements will cost $500,000.

Sketches for Big Office Building

Architeet Washington J. Miller, 417 Market street, San Francisco, has made preliminary sketches for an eight-story class "A" store and office building at Broadway and Twentieth streets, Oakland, for the Gorrill Estate. The estimated cost is $300,000.

Concrete Nurses' Home

Architect Albert Held, 618 Realty building, Spokane, has completed plans for a seven-story reinforced concrete Nurses' Home for the Sisters of Charity of the House of Providence, at Spokane, Washington.

Masonic Temple

The Tulare Masonic Hall Association has been incorporated and will erect a $70,000 store and lodge building, from plans by Architect J. R. Henderson of Tulare.

Bank Alterations

The drafting department of the H. H. Winner Co., Humboldt Bank building, San Francisco, is preparing plans for extensive improvements for the Market and Jones street branch of the Anglo-California Trust Co., in the old Praeger department store building. The main floor will be finished with mahogany and gold. Marble counters will be installed. The basement will be given over to vaults. Approximately $40,000 will be spent on the improvements.

The same firm has completed plans for alterations and additions to the Sixteenth and Mission branch of the Anglo-California Bank. Improvements costing $15,000 are planned.

Hutchison & Mills Active

Plans have been completed and contracts are being awarded for a two-story frame and stucco apartment house on College avenue, near Woolsey street, Oakland, for Mr. and Mrs. Harris Jenks. The estimated cost is $30,000. Hutchison & Mills of Oakland are the architects. They have also made plans for a two-story frame flat building to be erected on Rand street, Oakland, for Miss Tillie Carpenter, and for a one-story, six-room bungalow on Oakland avenue, Piedmont, for Mr. H. B. Blaisdell.

Architect to Have Own Building

Architect G. A. Lansburgh of San Francisco, recently returned from the East with commissions to prepare plans for several new buildings, particulars of which will be announced shortly. Mr. Lansburgh is preparing to move his offices from the Gunst building at Third and Mission streets, San Francisco, to a building of his own which he intends to erect in the down town section of San Francisco.

Architect Coulter Busy

Architect Norman R. Coulter, Maskey building, San Francisco, has a half dozen country school buildings under construction in various parts of the state, including an elementary school in Merced, costing $35,000; a four-room and auditorium school house near Santa Rosa for the Roseland School District, and a frame gymnasium and auditorium for the Anderson Valley School District at Boonville, Mendocino county.

Oakland Apartment House

Plans have been completed by Architects Schirmer-Bugbee Company, Thayer building, Oakland, for a $90,000 three-story and basement frame and stucco apartment house to be built on Wayne avenue facing Lake Merritt, Oakland, for Mrs. P. C. Renaud. There will be twenty-four apartments, of three and four rooms each.

$25,000 Oakland Residence

Architect Hamilton Murdock, Syndicate building, Oakland, is preparing working drawings for a large three-story concrete and frame residence having fifteen rooms, with elaborate landscape gardening, swimming pool, tennis courts, etc., at Montclair, above Piedmont. The owner is Dr. H. D. Kneedler, head of the United States Department of Health, Philippine Islands. Construction is to start the first of the year.

New Residence Tract

Messrs. Boxton & Zweig, builders, with offices in the Flatiron building, San Francisco, report that they are starting a new residential district in the Highlands, Marin county, a subdivision recently opened by Mr. Peter Bacigalupi, Jr., of San Rafael. Highlands is a beautifully wooded tract of 112 acres with a a frontage of more than one mile on the highway and railroad, midway between San Anselmo and San Rafael.

$18,000 Residence Flats

Architect S. Heiman, 57 Post street, San Francisco, has taken out a building permit for a two-story residence flat building for Mrs. Pearl Silverstein on the east side of Palm avenue, south of California street, San Francisco, to cost $18,000. Mr. Heiman has prospects of considerable work this fall which he will take up upon his return from a vacation through the southern part of the state.

Hayward Schools

Plans have been completed by Architect Henry C. Smith of San Francisco, for one of the two new school buildings to be erected there under a bond issue of $180,000, the bonds having been voted and sold. Plans for the larger of the two buildings, to cost $110,000, will be completed in about thirty days. Construction will be of concrete with terra cotta tile roof.

Five-Story Apartment House

Mr. A. Merrill Bowser, housing consultant, with offices in the Hearst building, San Francisco, has completed plans for a five-story reinforced concrete apartment house for Mr. L. B. Ham, 340 Eighteenth avenue, San Francisco. The building will be erected on Stockton street, north of Bush, at an estimated cost of $60,000.

W. P. Fuller Company To Build in Fresno

W. P. Fuller & Company have purchased a building site in Fresno on the southeast corner of Los Angeles and "M" streets. It is reported the company is making arrangements to erect a substantial building on the site.

Books on Drafting Room Practice

Mr. L. E. Lucas, an architect of Petersburg, Va., says in his inquiry for books on drafting room practice:

"It occurred to me that some of the old heads had perhaps jotted down some of the little kinks and short cuts that they discovered in their practice and gotten them into book form."

There are hosts of books on architectural and mechanical drafting, some worthy and some not. The Industrial Press of 49 Lafayette street, New York, publish a pamphlet called "Drafting Room Practice, Working Drawings and Drafting Room Kinks," which, while largely mechanical, is very good. French, of Ohio State University, has written numerous good books along architectural and mechanical lines in drafting. A good deal can be gotten from the texts of the International Correspondence School, and the handiest book to be found in perspective is by Mr. Frank E. Mathewson and published by the Taylor-Holden Company, of Springfield, Mass.—Ex.

Designing Many Buildings

Architects Miller & Warnecke, Perry building, Oakland, are completing plans for a two-story frame and stucco hotel to be erected in San Luis Obispo for S. Leggett of that city. The building will contain 32 rooms. Construction cost is estimated at $70,000.

The same architects are preparing plans for a reinforced concrete apartment house to be erected in Paso Robles at a cost of $20,000 and for a one-story frame and stucco residence in the same city for Mr. Fred Cummings, costing $10,000.

Displays Ignorance When He Says "Frisco"

A San Francisco architect recently addressed the following letter to the editor of the Chronicle:

San Francisco (St. Francis) is an inspiring name in history, in literature it is one of the most treasured names in the annals of the Christian church, a name to be guarded in its high estate.

Flushed by his warmth for the "Warder of the Western Gate," New York is comparing St. Francis with "Jack" Dempsey for the purpose of justifying the use of the objectionable nickname "Frisco." The writer is, perhaps, unaware how far afield he has strayed. NATHANIEL BLAISDELL.

Busy on School Work

Architects Wright & Saterlee of Stockton, have completed plans for a half dozen small country schools, including additions to existing buildings at Tracy, Thornton, Ripon, and a $65,000 school at Escalon, San Joaquin county.

Redwood City School

Redwood City School District has voted $300,000 for a new building and the purchase of a 40-acre tract as a site for the structure has been authorized. No architect has been selected as yet.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Waste in Heating Poorly Built Houses

SANITARY engineers and health officers have reached the conclusion that a 68-degree temperature is most conducive to healthfulness in dwellings. Experts are agreed that a ton and a half of coal per room per year is ample to maintain such a temperature in a dwelling properly insulated and otherwise well constructed. Yet, we are told by the American Lumberman the amount of coal actually consumed in heating the average room in American dwellings is, owing to defective construction and lack of insulation, from two to three times that quantity, and the temperature of the rooms is below the degree of comfort much of the time. In other words, the average American householder finds that his coal dollar is worth only sixty cents and, this being so, untold millions of dollars are unnecessarily burnt up through the inefficiency or carelessness of contractors and builders.

So long as many dwellings are built to sell and without much regard to the cost of heating them or to the comfort of those occupying them, heat insulation may not receive a great deal of consideration from the builder unless the public in general and prospective home-owners in particular know something of the economics of such insulation. Furthermore and in view of the fact that coal prices have been mounting steadily, with further increases in prospect, the subject of coal conservation is of vital interest not only to the individual consumer, but to the nation at large.

The necessity of better building construction is paramount, insists this lumber journal, especially with respect to heat insulation, the improvement of which is neither impracticable nor costly. Not only is it wholly practicable to insulate a dwelling when it is building, but it is wholly practicable to improve the insulation of dwellings already built. One view commonly held is that an air space is a nonconductor of heat; whereas, it is only a dead space that is a nonconductor. "Though the common construction of walls provides an air space all right, it is generally far from a dead air space. On the contrary, the dwelling wall as commonly constructed provides a series of flues through which the air is drawn with considerable celerity. The ordinary lath-and-plaster construction, when not supplemented by other insulation, permits the escape of enough heat through the walls to raise the temperature of the air between the studding and cause it to rise. The escape of more heat through the ceilings increases the movement up the wall 'flues,' with the result that a systematic drain of heat from walls and ceilings is set up. During ordinary weather this condition makes heating difficult; but in case of a gale and low temperature the heat drainage is tremendous and makes anything like comfort within the rooms either impracticable or possible only at a greatly increased consumption of fuel."

A movement is on foot to utilize all public educational institutions — public schools and community center—in spreading knowledge as to the proper construction of dwellings and public buildings, along with their proper insulation, by means of portable exhibits. Chicago lumbermen and other citizens have had an opportunity to see an exhibit of this kind placed in the club rooms of the Lumbermen's Association. It comprises several good-sized sections of walls, floors, ceilings and roofs of various forms of construction suspended vertically from a display stand somewhat like the leaves of a book stood on end. In connection with the exhibit itself may be provided placards giving the insulating values of the various forms of construction; so that any one may learn at a glance almost what is the best form of construction for his particular purpose. Incidentally, he will learn what he can do, if he already has a cold house, to improve its insulation.

One suburban householder learned from this exhibit that by simply covering the lead pipes from his furnace with asbestos moulded covering and inserting fiber felt a quarter of an inch thick between the ceiling of the upper rooms of his home and the floor of the attic, he could heat the seven-room house comfortably with fifteen instead of the customary twenty-two tons of furnace coal.—Valve World.

Committee on Building

The Western Society of Engineers have inaugurated a new line of endeavor by creating a "Committee on Building." The purpose is to study the utility of buildings rather than considering them from the structural standpoint. The study will include dwellings, apartments, and industrial, and office buildings and will go into the uses and occupancies of the structures, in the endeavor to obtain

better planning and better structures more nearly adapted to the use to which they will be put.

The committee will be composed of architects, and foundation, structural, mechanical, and electrical engineers, as well as those in the society who are interested in the maintenance and operation of buildings.

Building codes of the largest cities will be studied in the expectation that recommendations may be made for their improvement.

Judging from the thorough work for which the Western Society of Engineers has been noted it may be expected that material good may be accomplished by this committee.—Bulletin Associated General Contractors.

Subaqueous Bridge for Bay

Editor The Architect and Engineer:

On pages 98-99 of your August number I note a plan for crossing San Francisco Bay submitted by Mr. Maurice C. Couchot, C. E. and would respectfully submit that the scheme is but a variant of that published by you in your issue of December 1920 describing Mr. Fitzpatrick's patented subaqueous bridge. This is a concrete tube carried upon or anchored by piers if it is desirable to reduce grade of tube, or merely sunken in dredged ditches at the bottom of the bay which evidently is Mr. Couchot's suggestion.

Furthermore, that same scheme was published in The Architect and Engineer January, 1917, also in the New York Journal of September 16th, 1900, and the British Engineering Review of September 13th, 1907, and in many other technical journals and newspapers.

This is submitted to you in Mr. Fitzpatrick's absence.

Very truly yours,

Chicago, Ill. P. P. Lukens, Secretary.

Big Irrigation Project

Mr. George Merrick, president of the Merrick Company, Yakima, Washington, is in the market for the names of large contracting firms who would be interested in bidding on a $25,000,000 irrigation project in Yakima Valley. The work is to include an immense concrete-lined irrigation canal.

Tunnel Plans Approved

Plans and specifications for the George Creek tunnel of the Skagit power project, to be about 21 feet in diameter and two miles long, cut through a mountain of granite have been approved by the Seattle board of public works. The tunnel will cost $2,000,00. It was decided to advertise for bids immediately.

The Engineer Plus—Essentials in Making a Real Engineer

By J. H. MONTGOMERY*

ONE of my earliest recollections is of a little wooden puzzle in the shape of a rocking chair. It was made of a number of pieces skillfully fitted together about one central piece which was itself a perfect miniature chair. This seems to be a sort of a picture of any professional man. The difference between a lawyer, a doctor, a merchant and an engineer lies deeper than just the things that each one knows or the acts which he performs. It consists rather in an attitude of mind. In the presence of a great natural resource, like a waterfall, the artist sees the aesthetic spectacle, and responds with a painting, a poem or a symphony. Looking at the same waterfall, the business man sees only a source of power to be harnessed and capitalized. To him it means factories, transmission lines, power to be sold. To the engineer it is a problem challenging solution. He naturally works it out in terms of horsepower and the final outcome of his labor may seem to be about the same as that of the business men, i. e., factories and power. The real point of interest for the genuine engineer, however, is in the problem and not in the result. Nature's forces resist him, she does not yield willingly, her laws are complex, she puts up a good fight. The joy of the engineer is in winning his fight, in solving his problem. This is why so few engineers are satisfied on an operating job, unless it is one which constantly presents new problems.

This interest in the problem and its solution constitute the core of the real engineer. When a boy comes to the university wishing to take up an engineering course this is the thing we watch for. The nature of the high school studies which he selected reveal it in part. His attitude toward his work indicates it still further. Sometimes, of course, mistakes are made, and after several years of study or even of professional work after graduation, the young man finds himself to be a misfit.

Now this core—this attitude of mind toward natures' problems is essential in the making of a real engineer. . . It is by no means, however, the completed article. Many other things must be added. Let me mention some of these things which constitute the "plus" of the engineer.

The first of these is a reasonably complete knowledge of science, particularly physics and chemistry. Geology is desirable and, of course, essential for those who would specialize in mining. It is for this reason that we require elementary physics and chemistry for matriculation and provide further training in each of

*Professor at the University of Southern California. Synopsis of an address delivered before Los Angeles Chapter, American Association of Engineers.

these subjects during the college course. One can do a good many things in construction and even in design by rule of thumb and by using the hand books. Sooner or later, however, further progress is denied to one who is ignorant of the fundamental scientific facts. No real engineer is content to follow the used trails; he wants to blaze a way for himself. Such original progress must originate in a sound knowledge of elemental scientific facts.

In the second place, there must be a thoroughgoing acquaintance with mathematics. The solution of algebraic equations should present no more difficulty than the use of the multiplication table. Plane and solid geometry and trigonometry and a reasonable facility in the processes of calculus must form part of the engineer's mental equipment.

The third element to be mentioned is detailed information about the chosen field of specialization. This is accomplished in the technical school during the junior and senior years. The first two years are devoted to laying a foundation in science and mathematics, with some introduction to the engineering subjects of general interest to all branches of the profession. In most schools the work of the first two years is practically the same for all courses. Then must be made the choice between civil, mechanical, electrical, mining or some other branch of engineering.

The time has passed when there can be even a slight acquaintance with the entire engineering field. Never again will a Rankine write authoritatively on all branches of engineering. It is not even possible in a college course to cover one small division. The student is only started and must continue to add to his fund of specialized knowledge as long as he is in active work.

The fourth part of the "plus" is practical experience, some first hand contact with construction work or other actual carrying out of technical processes. This puts the prospective engineer in a position to understand the work of the artisan upon whom he must presently depend to carry out his ideas. It will give him a practical understanding of the limitations of such work. It will teach him the terms of the trade so that he can talk intelligently about it. In these things lie the value of college shop courses. It is not their purpose to turn out machinists or pattern makers or blacksmiths. At the University of Southern California we try to accomplish this end by making vacation work a required part of the engineering course. This work must be approved by the department and forms a consistent addition to the theoretical work.

Now for the fifth item I wish to include what may seem at first quite foreign to the needs of the engineer. That is the ability to use English. As I have often said to our students, it makes little difference how sound your engineering ideas are if you cannot convey those ideas to others. The whole success of a given plan may rest on the convincing wording of an engineering report. Every man who hopes to go far in the profession should be able to write decent, grammatical English which will present his ideas clearly and forcibly. He should also be able, when occasion demands, to stand up on his two feet and tell others his notions clearly and without embarrassment. The command of written and spoken English is an indispensible part of the engineer's equipment.

Finally, if the highest success is to be won, an important part of the "plus" will be sound social and moral ideals. The engineering profession is one of the cleanest in the world. There are few grafters in it. The very nature of that "core" of interest in challenging problems tends this way. The man whose aim is the joy of overcoming obstacles is not apt to stoop to petty, materialistic meanness.

The engineer is to be a useful citizen in fields outside his immediate work. He not only builds bridges and power plants for the community, but through clean living builds the community itself.

California Highway Association

The California Highway Association, recently incorporated, is an organization of practical highway administrators and builders on the lines of similar associations in Massachusetts and New York. Its objects are stated to be the "acquirement and dissemination of knowledge, both theoretical and practical, relating to the construction and maintenance of roads, bridges and highways of California and the traffic theron, and the drafting, advocacy and support of just laws to promote the construction of more and better highways, and to provide for their preservation after they are built."

Membership in the association will be confined to those having active connection with the administration or maintenance of streets, roads and highways. The officers are as follows:

Col. Ed. Fletcher of San Diego, president; Mr. Richard J. Welsh, supervisor of the city and county of San Francisco, first vice-president; Mr. Jonathan Dodge, former chairman of the board of supervisors of Los Angeles county, second vice-president; Mr. J. C. Haveley, highway commissioner of Sacramento county, secretary and treasurer.

Engineers Report on Marshall Plan

Los Angeles Section, American Society of Civil Engineers, by unanimous vote at its meeting August 10, adopted the report of the committee on conservation dealing with the so-called "Marshall Plan" for a state-wide system of irrigation.

GENERAL VIEW OF OLIVER SALT POND
(Note the salt line on the small dykes)

The Drainage and Protection of Marsh Lands

By WALTER GRAHAM

NEAR Mount Eden, California, and on the shores of San Francisco Bay, E. A. Oliver & Company have a large and active plant for the production of sea salt by evaporation. Many acres of tide lands are laid off as salt evaporating beds, and produce common salt in large quantities, and considerable amounts of by-products, like epson salts, gypsum, magnesium sulphate, etc.

Another branch of the business of this company which is of peculiar interest is its development of over a thousand acres of tide land, originally marshy and worthless, but now providing feeding grounds for great numbers of wild ducks in fresh water ponds which are especially provided for the purpose, and which bring the company an important revenue. The same land at other seasons supplies pasturage for more than five hundred cattle. The equipment which is necessary for this double use is decidedly ingenious. Some of it could no doubt be adopted with good results by owners of similar tracts on the Atlantic or Gulf Coasts.

Many shallow ponds are scattered over the territory. These, with little plots of land and small shacks or cottages, are leased to hunters, at rentals in some cases running as high as fifteen hundred dollars per year.

This portion of the bay shore is naturally a great resort for wild ducks, and large numbers can often be seen in the bay itself, in the ditches that run through the land, and feeding on the grass, etc., on the low lying land. The Olivers absolutely protect the ducks on the bay side and everywhere except on the plots actually leased to hunters. This encourages the birds to continue their visits to this shore in spite of all the shooting done on the rented areas during open season.

The land is now separated from the bay by numerous broad dikes, along the tops of which are roadways. The problem of its maintenance in profitable condition consists in draining off the surface water which falls or flows upon it during the rainy season, in protecting it from the tide water and in supplying it with irrigation water to maintain the pasturage during the long, dry California summer.

The water contained in the shallow duck ponds is fresh, and the grass and other feed through the tract is such as would not grow if it were occasionally flooded with salt water. It follows that openings must be provided which will permit of the flow of water from the land to the bay when desired, but that they must be such as may be closed against back-flow at high tide.

The fresh water for irrigation and for

DRAINAGE DITCH INSIDE THE LEVEE,
OLIVER SALT WORKS

CATTLE ON RECLAIMED LAND, OLIVER SALT WORKS, NEAR MT. EDEN, CALIFORNIA

the filling of the duck ponds is brought from Alameda Creek, from which it is admitted when required, through a Calco cast iron slide gate, 60 inches in diameter. It comes on to the land by gravity, and is in some cases pumped over levees or into ponds of higher levels than the water in the ditches by means of windmills. It is also carried across the tract for long distances in wooden flumes, serving to irrigate the land and maintain the pasture.

It is easy to prevent any excess of water from Alameda Creek getting on the land by closing the five foot slide gate; but after heavy rains the tract tends to become flooded with surface water, making the drainage system necessary.

Of course the only outlet available is the bay; and at high tide the water level there is considerably higher than the land —that is to say, most of this land lies between the low and high tide levels. In former years, the Olivers installed many wooden gates and bridges, intended to allow drainage and to exclude the tide water. These gates and bridges were very objectionable on many accounts.

1. They are very expensive. The open waterways, stopped at one end by wooden slide gates and sometimes at the other by

BACK FLOW OF TIDE WATER PREVENTED BY AUTOMATIC DRAINAGE GATE

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24-INCH CAST IRON SLIDE GATE, OLIVER SALT WORKS

some form of wooden flap gate, involve the building of bridges, since the dikes or levees are used as roadways. A complete installation of this sort costs about two thousand dollars.

2. They are not durable,—wooden construction going to pieces in comparatively few years.

3. They are very heavy and cumbersome to work. The wooden automatic gates are not very successful, and getting rid of the drainage water at low tide and excluding the bay water at other times involves a great deal of attention to these contrivances. Also it is necessary to supplement them from time to time by pumping operations.

4. There is a great deal of trouble from crabs digging around and underneath the wooden slides and causing serious leakages. This process, if unchecked, will result finally in undermining the whole structure. This is prevented by means of "crab fencing," which consists of a plank barrier carried several feet into the ground underneath and at the sides of the gate. Making this, is, of course, expensive, especially as the work can be done only at the lowest stages of the tide.

These costly and clumsy structures are now to a great extent replaced by installations of Ingot iron corrugated pipe, with cast iron slide gates at the inner (fresh water) ends, and Calco automatic drainage gates at the other ends. Most of these are twenty-four inches in diameter, though a few are thirty-six inches. One of these outfits costs about three hundred dollars, installed.

The slide gates remain closed during the time when it is desired to hold the fresh water, and when this is past, are opened so the automatic gates at the other ends of the pipes can drain the land and at the same time, protect it from back flow at high tide. If the slide gates alone were employed it would be necessary to open and close them four times daily at intervals of six hours, the periods coming an hour later each day. This job would call for the services of one or more gate tenders. By using the automatic gates at the other ends of the pipes, the slide gates can be left open all the time when it is desired to drain the land, regardless of the height of the tide.

If the automatic gates alone were employed, the fresh water would run out of the ditches whenever its level was higher than that of the tide water; and sometimes this is not desired,—for instance, when the duck ponds are being filled. The corrugated pipe with the two gates is the ideal combination, since it provides for retaining the fresh water when desired, and getting rid of it at other times, and for excluding the salt

CAST IRON SLIDE GATE EMPLOYED IN RECLAMATION WORK, MT. EDEN

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OLIVER SALT WORKS, MT. EDEN, CALIFORNIA

water at all times, all with minimum attention.

With this combination, the crabs do not trouble at all. Evidently they find it impossible to dig the whole distance through the levees. This consideration alone would be almost enough to cause the owners to choose this construction in preference to the wooden gates and bridges.

After four or five years of use, the pipes and gates show surprisingly little deterioration from rust, although placed in salt or brackish water. The galvanizing on the pipes is dulled and greasy looking, and in some few places, is worn or eaten away. The cast iron portions of the gates do not seem to be suffering from rust to amount to anything. All the installations look good for a long period of service.

The herds of cattle that thrive on the pasture of these reclaimed lands make a very pretty sight, and one reminiscent of the low country land and seascapes made memorable by the Dutch and Flemish painters. The flocks of ducks that hover over the ponds, or feed in the herbage on the margins, are an even more inspiring sight to anyone with any measure of sporting blood. After walking through the track on a winter afternoon, one readily understands why all the shooting privileges are leased to enthusiastic hunters, at profitable rentals, and for years in advance.

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LIGHTING FIXTURE DISPLAY ROOM, THE THOMAS DAY COMPANY, SAN FRANCISCO

The Thos. Day Company's Splendid Work in the Bank of Italy

The Florentine gilding and polychrome work on the counter screens, elevator grilles and gates in the new Bank of Italy building, San Francisco, was done by the Thomas Day Company.

The architects wished to get away from the conventional bronze of gold finishes usually resorted to on such work, and employed this firm to make a sample, following the same method used by them in obtaining the many beautiful finishes which they produce on lighting fixtures. The sample met instant approval. All the gold is hand-burnished and careful study was given to the disposition of the polychroming as well as the highlighting with gold; the result being one of pleasing harmony, the beautiful design of the iron work being enhanced by the careful consideration given to the placing of color.

The Thomas Day Company are now finishing the check desks, tables and frames for marble seats in the same lovely polychrome and gilt coloring. They employ a competent force of artists and are continually being employed to do this class of work, although their specialty is lighting fixtures.

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INTERPRETING *the* TIMES

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Combined Resources $60,473,521.88

Building Costs Less Now

WHEN the argument is made that it costs considerably less now than a year ago to erect a building the actual proof necesary to substantiate such argument is not always immediately available. This fact has prompted me to prepare a list of the present cost of some of the principal building materials and of the present rate of wages for carpenters and masons and to contrast the same with prices and rates which prevailed a year ago, when costs were at the highest peak.

In some instances the cost of material for dwellings and other buildings has gone down more than 50 per cent. Note the following:

WHAT $250 BOUGHT IN 1920 AND WHAT IT WILL BUY NOW

1920		1921	
1,000 ft. Clear Maple Flooring	$250.00	1,000 ft. Clear Maple Flooring	$100.00
		1,000 ft. 2x10" Joists	39.00
		1,000 ft. 2x4" Studs	39.00
		1,000 ft. 1x6" D. & M.	37.00
		5,000 Shingles	25.00
		6 Rolls Building Paper	10.00
	$250.00		$250.00

1920		1921	
200 hrs. Mason Labor	$250.00	250 hrs. Mason Labor	$250.00
250 hrs. Carpenter Labor	$250.00	312½ hrs. Carp. Labor	$250.00

Some of the above prices and rates may vary more or less in different localities, but that fact, if so, is not very essential. The principal fact remains, and it cannot be disputed, that building costs have been greatly reduced, fully in line or more so than the reduction in the cost of foodstuffs and other commodities.

In discussing building costs and conditions with a client the contractor should drive home to him the facts shown in the foregoing table. Now is the time to build. Houses are scarce and rents bring a good return upon the investment. Some of the manufacturing lines are working with reduced forces; we all know that, but the building trade is the foundation upon which all other activities depend, and if that trade is put to work as it should be it will be only a short time when all other industries will revive.—By Richard C. Ferge in the Builders' Bulletin of Milwaukee, June, 1921.

State Highway Buildings

The California State Highway Commission is about to start construction on a group of warehouses in Sacramento which will entail an expense of $250,000 or more. There will also be a shop building, office and storage shed. The Commission has on the ground about two solid acres of trucks, locomotives, material cars, tractors, concrete mixers, and other equipment, much of which was turned over to the State of California by the War Department. Part of this property will be sheltered in the sheds until it is taken out for use on various projects as the highway-building program advances.

Open Los Angeles Offices

Two San Francisco firms, dealers in reinforcing steel bars, recently have established Los Angeles business conections. They are Gunn, Carle & Co., who have opened offices in the H. W. Hellman building, and Badt-Falk & Co., in the Pantages building.

QUALITY SERVICE

A. QUANDT & SON PAINTERS AND DECORATORS
ESTABLISHED 1885

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180 JESSIE STREET
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DEPENDABILITY

STUCCO has gained its merited recognition in the building of fine country estates as the material most widely adapted to all forms and contours, expressing the architect's or owner's individuality.

The distinctive stucco textures and color tones made possible by the use of ATLAS-WHITE Portland Cement are almost unlimited in their variety.

The services of the Technical Department of this Company may be of value to you in connection with any stucco construction you may now be contemplating. Literature on request.

THE ATLAS PORTLAND CEMENT COMPANY

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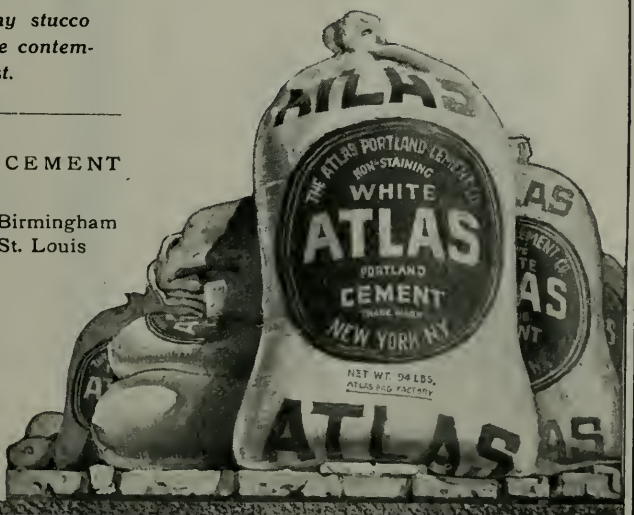

ATLAS-WHITE PORTLAND CEMENT

Production Schedule

The Master Plumbers Association of Montreal, Canada.

THE adoption of "Production Schedules" in construction has been suggested as one means of standardizing output on an efficient basis. The following "Production Schedule" recently adopted by the Master Plumbers of Montreal gives an idea of what might be expected in this connection, says the Bulletin of the Associated General Contractors.

The accompanying "Production Schedule" has been adopted by the Master Plumbers' Association of Montreal after very full consideration of all the factors concerned.

The want of a suitable standard by which the value of the work performed by our various mechanics (journeymen plumbers and steamfitters) could be fairly assessed has been accutely felt during the past few years, and especially at the present time when the industries of the Dominion are taking all reasonable steps to ensure that for wages paid, adequate returns in labor must be made.

"There is, however, no intention that this Schedule should be rigid in its application; nor is it intended, as has been suggested in various quarters, that payment by 'piece work' should be forthwith inaugurated in the plumbing and steamfitting trades. But if it enables the Master Plumber and Steamfitter to estimate more closely the contracts he undertakes, and to remunerate his mechanics according to their experience and proficiency, the adoption of this Schedule as a guide will be fully justified."

JAMES BALLANTYNE,
Convener of Special Committee.

SCHEDULE

Memorandum of what the Master Plumbers' Association of Montreal considers a fair and reasonable production from journeymen plumbers and steamfitters:

PLUMBING

Erecting cast iron underground drains, less digging and back-filling, allowing a fitting at an average of every ten feet:

3″	Number	of	feet	per	9	hours	50
4″	"	"	"	"	"	"	45
5″	"	"	"	"	"	"	40
6″	"	"	"	"	"	"	35
8″	"	"	"	"	"	"	25

Erecting upright stacks of Medium Soil Pipe, allowing a fitting at an average of every ten feet:

2″	Number	of	feet	per	9	hours	70
3″	"	"	"	"	"	"	60
4″	"	"	"	"	"	"	50
5″	"	"	"	"	"	"	45
6″	"	"	"	"	"	"	35
8″	"	"	"	"	"	"	25

Erecting Medium Soil Pipe Back Vent Stacks, allowing a fitting at an average of every ten feet:

2″	Number	of	feet	per	9	hours	70
3″	"	"	"	"	"	"	60
4″	"	"	"	"	"	"	50

Erecting Wrought Iron Stacks of soil pipe for Durham System, allowing a fitting at an average of every ten feet:

4″	Number	of	feet	per	9	hours	30
4½″	"	"	"	"	"	"	27
5″	"	"	"	"	"	"	25
6″	"	"	"	"	"	"	20

Erecting Wrought Iron Back Vent Pipe, allowing a fitting on an average of every ten feet:

1¼″	Number	of	feet	per	9	hours	60
1½″	"	"	"	"	"	"	55
2″	"	"	"	"	"	"	50
2½″	"	"	"	"	"	"	45
3″	"	"	"	"	"	"	40
3½″	"	"	"	"	"	"	37
4″	"	"	"	"	"	"	35

The Ball Means Strength, Economy

The Reliance Ball Bearing principle permits of the most compact, rigid and simple construction. It provides the greatest strength to the exclusion of cumbersome and trouble-making parts.

The action is direct: The balls are not accessory to other rotating parts but themselves support the door and provide easy action irrespective of its weight.

RELIANCE Ball Bearing ELEVATOR Door Hangers

Reliance simplicity means quicker and cheaper installation. This saving permits the use of "Reliance" at an ultimate cost approximating that of the cheaper device.

RELIANCE-GRANT ELEVATOR EQUIPMENT CORP'N
Park Ave. and 40th St., New York
PACIFIC COAST AGENTS
Waterhouse-Wilcox Co..... San Francisco and Los Angeles, Cal.
Columbia Wire & Iron Works, Portland, Ore.
D. E. Fryer & Co..... Seattle, Spokane, Tacoma, Wash.; Great Falls, Mont.

Erecting Upright Stacks of galvanized iron water pipe, allowing a fitting at an average of every ten feet:

¾″	Number	of	feet	per	9	hours	100
1″	"	"	"	"	"	"	90
1¼″	"	"	"	"	"	"	75
1½″	"	"	"	"	"	"	70
2″	"	"	"	"	"	"	60
2½″	"	"	"	"	"	"	45
3″	"	"	"	"	"	"	40
3½″	"	"	"	"	"	"	35
4″	"	"	"	"	"	"	30

Time for roughing in a three piece bath room, with all waste, hot and cold water, and back vent, complete, using cast iron soil pipe and galvanized iron pipe for hot and cold water, at an average distance from the stack of three feet:

20 hours—man and helper.

Allow for setting up this bath room with standard enamelled iron lavatory on brackets, standard enamelled iron bath, and low down closet combination:

15 hours—man and helper.

Time for setting up same bath room with porcelain pedestal lavatory, porcelain bath, syphon W.C. with flushometer valve:

30 hours—man and helper.

Time for roughing in the same bath room, using Durham System:

30 hours—man and helper.

Time for setting up the same bath room with enamelled iron fixtures, using Durham System:

30 hours—man and helper.

Time for setting up the same bath room with porcelain fixtures, using Durham System:

30 hours—man and helper.

Time for roughing in waste, hot and cold water and back vent for a kitchen or pantry sink, at an average of ten feet from the uprights:

10 hours—man and helper.

Time for setting up this sink:

5 hours—man and helper.

Allow for roughing in of waste, back vent, hot and cold water, for one pair of wash tubs, at an average distance from the connections on the drain of ten feet:

12 hours—man and helper.

Time for setting up this pair of wash tubs, from the floor line up:

10 hours—man and helper.

Allow for the roughing in of porcelain or enamelled iron slop sink on pedestal, waste, hot and cold water and back vent, at an average distance from the upright stacks of 5 feet:

9 hours—man and helper.

Allow for the setting of same from the floor line up:

5 hours—man and helper.

All the above work is figured on the basis of the way being clear for everything, that is, thimbles and sleeves, being provided in concrete work in concrete construction, and cutting being done by others when wood construction.

Hot Water Heating

Time for setting the different sizes of furnaces after foundation is made:

No. of hours man and helper for boilers No. 1 to No. 4.....4 hrs.
No. of hours man and helper for boilers No. 4½ to No. 6.....6 hrs.
No. of hours man and helper for boilers No. 6A to No. 8.....8 hrs.

Time for erecting hot water mains in pairs on ceiling only allowing for a fitting at an average of every ten feet:

1″	Number	of	feet	per	9	hours	90
1¼″	"	"	"	"	"	"	85
1½″	"	"	"	"	"	"	70
2″	"	"	"	"	"	"	50
2½″	"	"	"	"	"	"	40
3″	"	"	"	"	"	"	30
3½″	"	"	"	"	"	"	25
4″	"	"	"	"	"	"	20

Sollie Arronson, Owner.
Errdman & Barnett, Architects,
Los Angeles, Calif.

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Bay State Brick and Cement Coating truly expresses the architect's ideas of beauty for cement and stucco buildings.

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San Francisco

Time for erecting branches across the ceiling and through the ground floor with valve and elbow on, the proper height to receive radiator:

¾″	Number	of	branches	per	9	hrs.	6
1″	"	"	"	"	"	"	5
1¼″	"	"	"	"	"	"	4
1½″	"	"	"	"	"	"	3

Time for erecting a pair of risers from 3″ to 1″, allowing a fitting at an average of every ten feet:

1″	Number	of	feet	per	9	hours	65
1¼″	"	"	"	"	"	"	55
1½″	"	"	"	"	"	"	40
2″	"	"	"	"	"	"	35
2½″	"	"	"	"	"	"	25
3″	"	"	"	"	"	"	20

Number of branches that can be run from these risers to the various radiators, at an average distance from the riser of 8 feet, with branches brought through the floor the proper height to receive elbow and valve for the radiator:

¾″	Number	of	branches	per	9	hrs.	6
1″	"	"	"	"	"	"	5
1¼	"	"	"	"	"	"	4
1½″	"	"	"	"	"	"	3

Time allowed for setting and connecting of each radiator with an average connection of 1″:

1¼ hours—man and helper.

Time allowed for setting and connecting one automatic expansion tank complete:

9 hours—man and helper.

The above time allowed includes all necessary hangers on the basement ceiling, and all necessary straps and supports on risers. No cutting or repairing of passages of pipes included.

All-In-One Company Reorganized

The All-In-One Company has perfected a reorganization on a very substantial basis with prominent business men and capitalists as members of the board of directors. The personnel of this company which has been reincorporated for $1,000,000 is announced by the secretary, Mr. W. A. Wollman, as follows:

President—Mr. F. W. Brown, manager of the Avery Company of California.

Vice-President—Mr. Arthur Bateman, special lecturer, Trade Extension Bureau, and general manager of the Institution of Sanitary, Heating and Ventilating Engineers.

Secretary—Mr. M. A. Wollman, manager of the John Ochsner Corporation, and a large property holder in Sacramento.

Treasurer—Senator C. B. Bills, vice-president of Sacramento-San Joaquin Bank, and former president and manager of the Pioneer Fruit Company.

Director—Mr. Martin I. Welsh, attorney at law, former U. S. Commissioner and master plumber of Sacramento.

Director—Mr. Bert Moeller, part owner and manager of the Ford Agency of Sacramento.

Director—Mr. Carl E. Brown, manager of the Diamond Match Company's yard at Arbuckle.

Director—Mr. Edgar E. Wiker, attorney at law and manager of the Colusa County Fair.

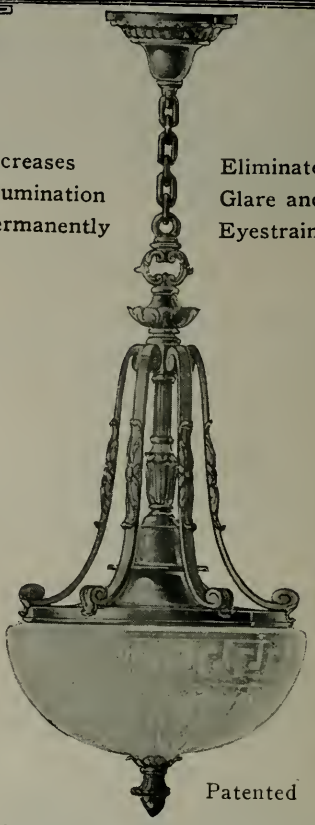
Director—Mr. E. A. Vermere.

Director—Mr. Jens C. Peterson, architect of the Sacramento schools.

Architects Exhibit Work

Los Angeles' trade exposition, in the new unit of the Los Angeles Union Wholesale Terminal, was a most successful undertaking from every point of view. Architectural exhibits were made by Messrs. John Parkinson and Donald Parkinson, John C. Austin, Weeks & Day, Harwood Hewitt, Reginald Johnson, Myron Hunt, Arthur Kelly, A. C. Martin and John M. Cooper, Walker & Eisen, Pierpont and Walter S. Davis.

RADIANTLIGHT



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RADIANTLIGHT gives you 49 per cent more light on working surfaces than a bare lamp.

Enclosed and dust-proof. A permanent highly polished reflector inside the bowl and protected from dust. A reflector which is easily removed and cleaned. A reflector so focused as to direct the light to working plane, without glare. A reflector that directs the light rays as scientifically as the headlight of your automobile. No shadows, rings or spots of light on ceiling.

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make for that super-elegance in which the exterior adornment of the home finds its highest expression. An element of charm is added by the broad variation of color tones in wondrous harmonizing effects and soft texture.

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Distributors for Northern California

SHARON BUILDING, SAN FRANCISCO

No One Type of Road Best—Traffic Needs Differ Much

No effort has been made to encourage the construction of any particular type of road in the Federal-aid projects administered by the Bureau of Roads. The legal requirements that the roads shall be "substantial in character" has not been interpreted to mean that only the most expensive types of road should be built. It has been recognized that the heavy and expensive construction which is necessary in New York, Massachusetts, and Pensylvania is not suitable or warranted for the less exacting traffic of Nevada, Idaho, and the Dakotas.

There is a suitable type of road for every type of traffic. Granite blocks are best around wharves and freight depots; country thoroughfares need to be better than rural side roads, lightly traveled. A number of other considerations have influenced the choice of type in many cases. It is frequently found that suitable local materials may cost less than better materials imported from a distance; approval of the use of local materials is not infrequently given for the purpose of encouraging local production. In parts of the far West the entire absence of water along a right of way, and the expense of keeping an adequate supply, often make it necessary to approve the building of a type of construction that can be built without using large quantities of water.

The initial decision as to the type of a particular road is made by the state highway department. The Bureau of Public Roads makes an independent study of the conditions. The most suitable type of road in the judgment of the engineers of the state department and of the Bureau of Public Roads is finally decided upon. The earth, sand-clay and gravel roads which make up 66 per cent of the mileage have cost only about one-fourth of the Federal-aid funds used, while the higher types, including cement concrete, brick, and bituminous concrete have called for 60 per cent of the money to build 24 per cent of the mileage.—Road Maker.

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HOME HEATING SYSTEM

THIS adaptation of the Dunham System of Heating is especially for the home or small building. It uses steam at very low pressure, not over eight ounces, for the distribution of heat. Pressure is automatically regulated. No troublesome air valves or radiators. Air is released by the Dunham Air Eliminator and the water returned naturally to the boiler. The end of each steam main is vented thru a Dunham Air Line Valve into the return piping and is dripped through a wet drip pipe directly back to the boiler.

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Who Shall Remove Forms?

The National Board for Jurisdictional Awards has under consideration the dispute between the Carpenters and the Building and Common Laborers' Unions. Both claim the job of wrecking and removing wooden concrete forms. The laborers claim that the removal of nails and the salvaging of form work require no special skill and can be done as well by common laborers as by skilled carpenters. The question should be settled on the basis of who can do the work most satisfactorily and most economically.—Bulletin of Associated General Contractors.

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In all parts of the country can be found ample proof of the suitability of Face Brick for public buildings.

Any member of this association is at all times ready to discuss the architect's Face Brick problems with him, and to co-operate to the fullest extent.

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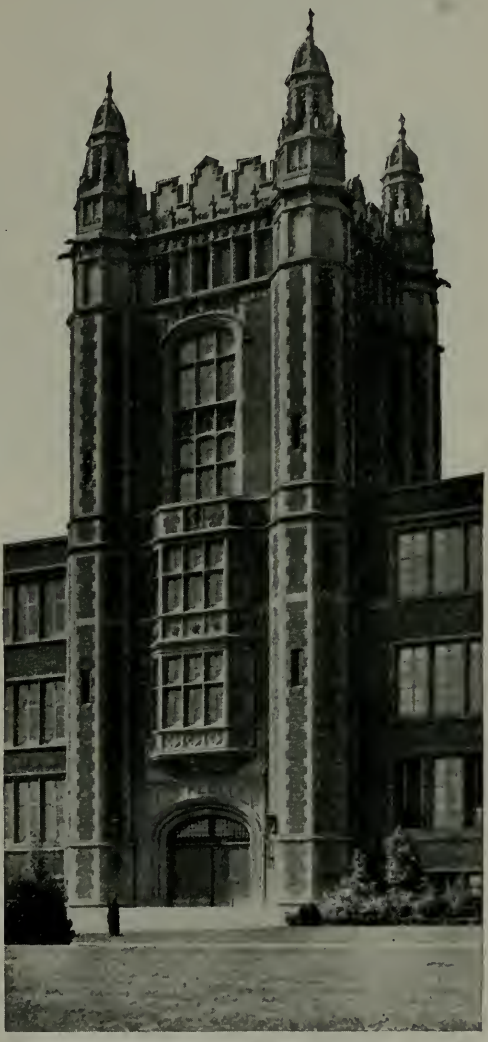

High School, Los Angeles, Cal. *John C. Austin, Architect*

Architects Enjoy Summer Outing

The Southern California Chapter of the American Institute of Architects held its August meeting at the Arlington Hotel, Santa Barbara. Mr. Winsor Soule of Santa Barbara, had charge of all arrangements for the entertainment of the guests. Mr. Fred E. Johnston, city manager of Santa Barbara, welcomed the architects to his city. Messrs. John Frederick Murphy and T. Mitchell Hastings, new chapter members of Santa Barbara, and Ralph T. Stevens and Camillo Fenzi, prominent landscape architects of Santa Barbara, were introduced. Mr. Howard Russell Butler, a noted artist of New York, made the principal address. Mr. Butler is the author of a system for denoting color by formula and was commissioned to make a painting to reproduce in exact tones the total eclipse of the sun, June 8, 1918. He was stationed at the U. S. naval observatory station at Baker, Ore., The picture is 49x33½ ins. and is on exhibition in the New York Natural History Museum.

A trip through Santa Barbara, Mission Ridge, the Riviera and Montecito districts was made Sunday morning. Santa Barbara and environs, on account of the palatial residences and wonderful landscape development, are particularly interesting to architects. Through the influence of Mr. Soule, many of the large estates, generally closed to the public, were thrown open for inspection by the architects. Among the most interesting places visited were the County National Bank, Mr. Myron Hunt and Mr. Winsor Soule, associate architects; Santa Barbara Mission: Peabody residence and gardens, Mr. Francis T. Underhill, architect and landscape architect; Knapp garden; Mr. Carlton M. Winslow, architect and Mr. Chas. G. Adams, consulting landscape architect for the upper gardens and Mr. Francis T. Underhill, landscape architect for lower gardens.

Luncheon was served at the "Patio," an old adobe residence restored and remodeled into a tea-room by Mr. James Osborne Craig, architect.

New Zealand Electric Plant

Announcement is made by Mr. John H. Hall, acting consular agent for New Zealand, that the public works department, Wellington, is calling for bids for the plant in connection with the Mangahao hydro-electric power scheme. The amount involved aggrgates approximately $1,250,000.

Sand and Gravel Rates Cut

The Michigan Contractor and Builder, of July 2, 1921, furnishes the following:

"Freight rates of all carriers in Michigan for the transportation of sand, gravel, and crushed stone, are reduced 25 per cent in the lower peninsula and 22 per cent in the upper peninsula, in an order signed by the Michigan Public Utilities Commission, effective May 10. This order does not affect the freight rates upon sand, gravel, and crushed stone where the same is to be used in foundries, or in the manufacture of glass, fertilizer, chemicals, or cement. It is the purpose of the order to thus reduce rates on such materials to be used in road building and genaral construction work.

"That the problem faced in Michigan at this time is one of cost when it comes to construction work, and not one of finances, is the opinion of the commission. It believes that by reducing the freight rates on these materials it will bring much more traffic to the railroads and at the same time stimulate building of roads, business structures and also dwellings which are so acutely needed in the cities now."

Marble Work in the Bank of Italy

The marble work in the new Bank of Italy building, San Francisco, has received much favorable comment from visitors and regular patrons of the institution for its beauty of careful execution.

A number of rare European marbles have been used, including a combination of black and gold from Italy, which has been very successfully used as a base. The counters are of Escalette from France with Rosatta trimmings. The latter is also an Italian marble, and possesses a warm buff color that makes it a splendid stone for decorative purposes.

The floors of the main banking room and safe deposit department are of pink Tennessee with a Belgium product for the black dot and border effect. Tennessee and Columbia marble are used on the stairways and in all the lavatories. The entire marble contract was executed by the Joseph Musto Sons Keenan Company of San Francisco and Los Angeles, and amounted to something like $150,000.

ARCHITECT'S SUPERINTENDENT. Fully competent and with very extensive experience on large theater construction, seeks a position. Have had full control of all trades and can refer to buildings in various cities as to results obtained. Willing to go anywhere. Inquiries solicited. Address Box 52, this office.

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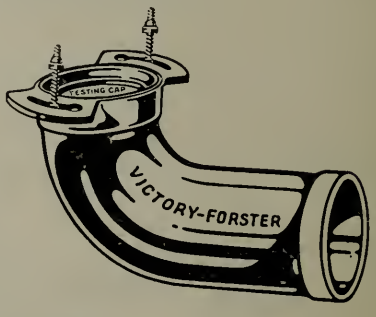

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Bond—1½% amount of contract.

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Common, $38.00 per 1000 laid.
Face, $100.00 per 1000 laid.
Common, f. o. b. cars, $16.50 plus cartage.
Face, f. o. b. cars, $55.00 per 1000, carload lots.

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12x12x3 in., 14 c. per square foot.
12x12x4 in., 15¾c. per square foot.
12x12x6 in., 22 c. per square foot.
12x12x8 in., 34 c. per square foot.
Hod carriers, $7.40 per day.
Bricklayers, $9.25 per day.
Lime—$3.25 per bbl.; carload, $2.75 per bbl.

Composition Floors—30c. per sq. ft.

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.25 per yd.
No. 4 rock	2.50 per yd.
Niles pea gravel	3.25 per yd.
Niles gravel	2.50 per yd.
Niles top gravel	3.00 per yd.
City gravel	2.25 per yd.
River sand	1.50 per yd.
Bank sand	1.00 per yd.

SAND
Del Monte, $1.25 to $1.50 per ton.
Fan Shell Beach, $2.50 to $3.00 per ton.
Car lots, f. o. b. Lake Majella.
Cement (f. o. b. cars)....$3.44 per bbl.
Rebate for sacks, 15c each.

Atlas "White"	$12.50 per bbl.
Medusa cement	$12.50 per bbl.
Forms	$25.00 per M

Wage—
Concrete workers .....$7.50 per day
Cement finishers ..... 8.35 per day
Laborers ..... 6.95 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.25 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $8.35 per day.

Electric Wiring—$7.00 to $11.00 per outlet for conduit work (including switches).
Knob and tube average $3.25 to $6.00 per outlet.
WAGE—Electricians, $9.25 per day.

Elevators—
Prices vary according to capacity speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $4,200; direct automatic, about $3,700.

Excavation—
$1.55 per yard, if sand.
Teams, $10.00 per day.
Trucks, $27.50 to $32.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 20c per square foot.
Plate, $1.20 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 41c per square foot.
Obscure glass, 28c per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $7.85 per day.

Heating—
Average, $2.00 per sq. ft. of radiation, according to conditions.
WAGE—Steamfitters, $9.25 per day.

Iron—
Cost of ornamental iron, cast iron, etc., depends on design.
WAGE—Iron workers, bridge and structural, $8.35 per day.
Architectural iron workers, $7.40 per day.

Lumber—(Prices delivered to bldg. site)
Common, $34 per M (average).
Com'n O. P. (select), $45 per M (average)
Flooring—

1x3 No. 2	$72.00 per 1000
1x4 No. 1	73.00 per 1000
1x4 No. 2	70.00 per 1000
1x4 No. 3	47.00 per 1000
1x6 No. 2 and better	73.00 per 1000
1¼x4 and 6 No. 2	75.00 per 1000
Slash grain, 1x4 No. 2	48.00 per 1000
Slash grain, 1x4 No. 3	39.00 per 1000
No. 1 common run to T. & G.	35.00 per 1000
Lath	6.50 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.00 per bdle.
No. 2	.90 per bdle.
Red Cedar	1.10 per bdle.

Hardwood Floors—
Maple floor (laid and finished), 25c per foot.
Factory grade floors (laid and finished), 20c per foot.
Oak (quartered, finished), 40c per foot.
⅜ Oak (clear), 29c per foot (plain).
⅜ Oak (select), 27c per foot (plain).
⅜ Oak, quartered, sawed, clear, 35c.
WAGE—Floor layers, $9.35 per day.

Hardwood Floors (not laid)—		Per M ft.
5/16x2" sq. edge	Clear quartered oak	$173.50
	Select quartered oak	121.50
	Clear plain oak	119.00
	Select plain oak	95.00
13/16x2¼" face	Clear quartered oak	210.00
	Select quartered oak	144.00
	Clear plain oak	157.50
	Select plain oak	114.00
	Clear maple	134.50
	Clear maple—white	178.00
13/16x3¼" face	Clear maple	$134.50
1⅛x2¼" face	Clear maple	134.50
⅜x2" face	Clear quartered oak	158.00

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box frame windows (average) with trim, $7.50 and up each.
Doors, including trim (single panel), $10 and up each.
Doors, including trim (five panel) .....$9.00 each
Screen doors, $3.50 each.
Window screens, $1.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $9 each.
Dining room cases, if not too elaborate, $10 each.
Labor— Rough carpentry, warehouse heavy framing, $13.00 per 1000.
For smaller work, average, $25.00 to $35.00 per 1000.
WAGE—Carpenters, $8.35 per day.
Laborers—Common, $6.00 per day.

Marble—(Not set) add 60c up per ft. for setting

Columbia	$2.05 sq. ft.
Alaska	2.05 sq. ft.
San Saba	3.65 sq. ft.
Tennessee	2.50 sq. ft.
Verde Antique	4.55 sq. ft.

Wages — Marble setters, $7.40 per day; helpers, $5.55 per day. Marble polishers and finishers, $6.00 per day.

Painting—
Two-coat work, 35c per yard.
Three-coat work, 50c per yard.
Whitewashing, 5c per yard.
Cold water painting, 9c per yard.
Turpentine, $1.05 per gal. in cases and 90c per gal. in tanks.
Raw Linseed oil, 92c per gal in barrels.
Boiled Linseed oil, 94 per gal in bbls.
Pioneer white and red lead, 11¾c lb. in one ton purchases; 12½c lb. for less than 500 lbs.
WAGE—Painters, $8.35 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.30 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $6.50 at yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.25 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. warehouse, $3.25 per bbl.
Hardwall plaster, $22.00 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
WAGE—Plasterers, $10.20 per day.
Lathers, $9.25 per day.
Hod carriers, $8.35 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.25 per day.

Reinforcing Steel—
Base price for less than car load lots, $3.00 per 100 lbs.
Carload lots, $2.75 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)
Average cost to install, $23 per ton.
WAGE—Housesmiths, $7.85 per day.

Roofing—
Five ply tar and gravel $6.50 per square for 30 squares or over.
Less than 30 squares, $7.00 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingle, $10.00 per square in place.
Cedar Shingle, $10.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $8.25 per sq.
Reinf'd Pabco, 20 yr. roof, $14 per sq.
Recoat, with Gravel, $3.00 per square.
Wage — Roofers $8.35 per day.

Rough Hardware—
Nails, per keg, $5.20 base.
Deafening felt, $100 per ton.
Building paper, P. & B.,
1 ply, $3.50 per 1000 ft. roll.
2 ply, $5.50 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.00 per hank 100 ft.
Common, $1.00 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 35c a square foot (not glazed).
WAGE—Sheet metal workers, $9.25 per day.

Stone—
Granite, average $11.00 sq. ft. in place.
Sandstone, average $7.00 sq. ft. in place.
WAGE—Stone cutters, $8.35 per day.
Stone setters, $8.35 and $8.80 per day.

Store Fronts—
Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.25 per lin. foot.
Zouri bar, $1.25 per lin. foot.
Zouri Underwriters' Specification sash, $1.60 per lin. foot.

Structural Steel—$130.00 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected) $121 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft. (Includes mullions and hardware.)

Tile—White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. foot, laid.
WAGE—Tilesetters, $8.35 per day.

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Replacing culverts is expensive. Generally a road must be torn up and remade.

Engineers, contractors, highway commissioners, farmers and other men interested in good roads should know why ARMCO Culverts are the most suitable for service installations. ARMCO Culverts are strong, economical to install, and resist the action of shifting foundations. ARMCO Culverts are durable because they are made from galvanized ARMCO Ingot Iron, the purity of which guarantees a uniform texture that resists rust.

Interpreting this purity into culvert terms, it means many more years of service than would be obtained from other kinds of iron or steel. First costs added to the cost of years of upkeep will prove that galvanized ARMCO Ingot Iron Culverts are the most economical.

The trade-mark ARMCO carries the assurance that products bearing that mark are manufactured by the American Rolling Mill Company with the skill, intelligence, and fidelity associated with its products, and hence can be depended upon to possess in the highest degree the merit claimed for them. The trade-mark ARMCO is registered in the U. S. Patent Office.

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Thousands of historical structures, as well as all types of public and private buildings, in every civilized country represent examples of Ripolin endurance and Ripolin beauty. Of Holland origin, Ripolin has carried the skill of old country enamel makers into every corner of the globe. Its process is still unknown outside of the Ripolin factories.

It is important to note that these goods will be manufactured on the original formula in the various factories comprising the Glidden organizations, manufactured of the same pigments and liquids, and by the same grinding process, under the direct supervision of Dutch experts, who are now on their way from the Ripolin factories to those of the Glidden Company. At the same time, enamel experts from the American organization are on their way to Holland to spend considerable time in the Ripolin factories.

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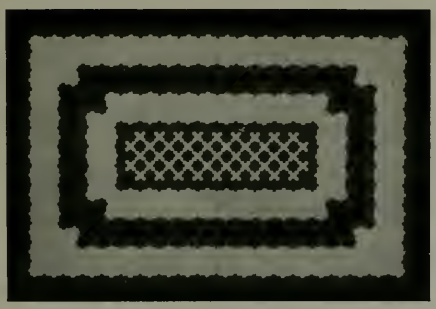

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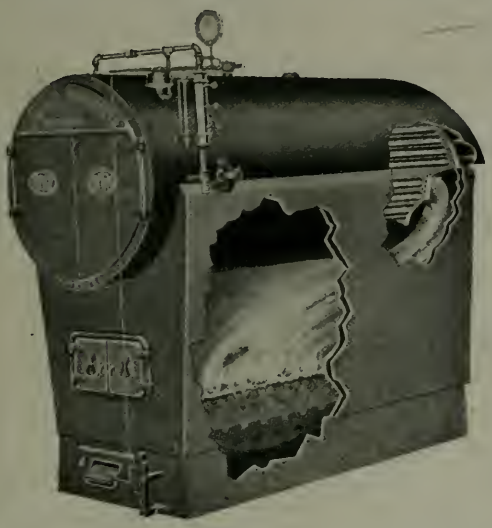

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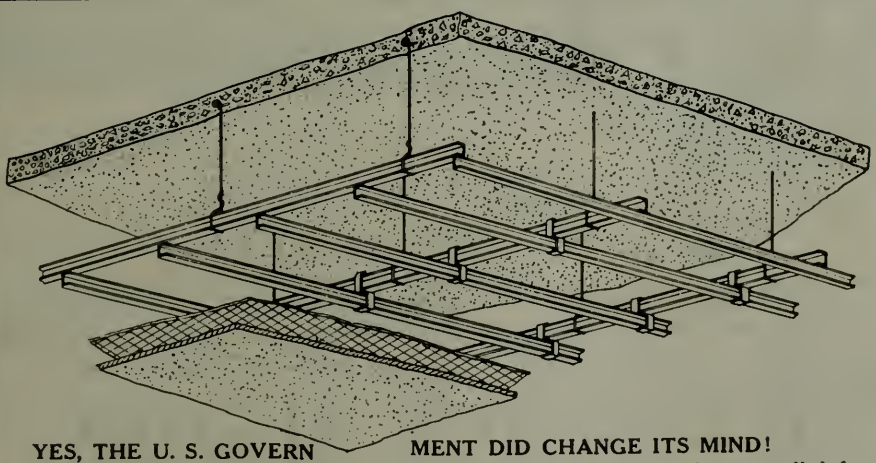

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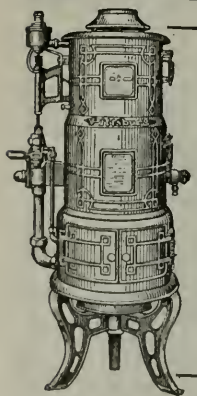

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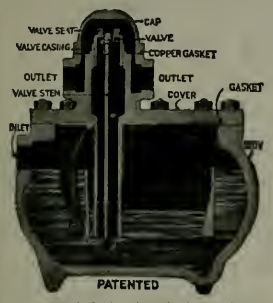

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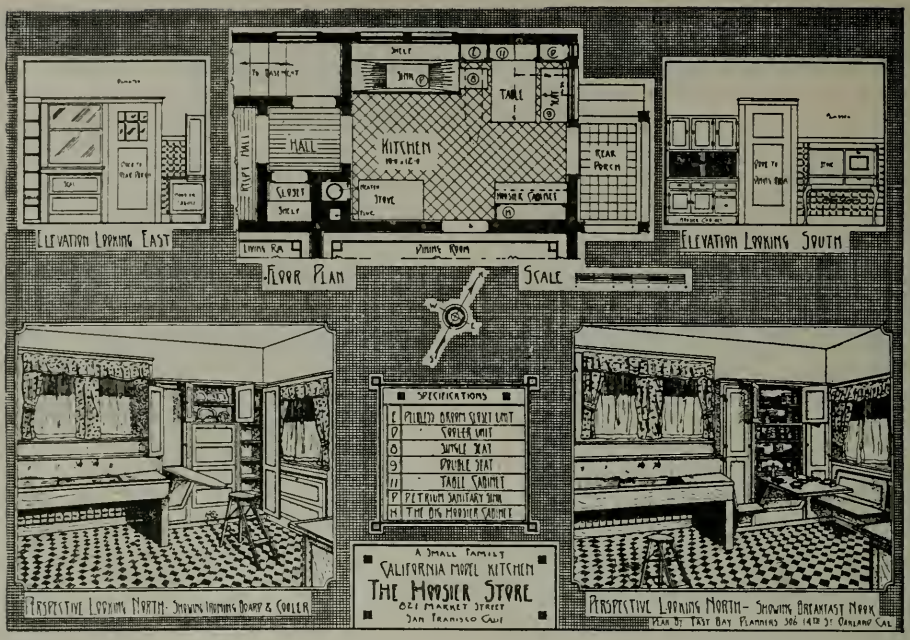

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Smith hastily scanned the two brief letters. He did not know either of the salesmen. But their propositions, bids, specifications, and so on struck him as being equally acceptable, equally well presented.

For just a flashing instant he considered the two letters. And it was right there that he perhaps unconsciously estimated the men he had to see—and the firms that they represented—by the appearance of two letters of equal appeal. His attention stopped on the letterhead which introduced the firm of MINER & CROFFITT, tastefully lithographed on a crisp, bond paper and suggesting a firm of stability. The other was barren of any such suggestion—it was on a cheap quality of paper, poorly printed, and the impression it gave was a negative one.

"Miss Collins," he directed, "send in Mr. Wade of Miner & Coffitt"—and that is how a $12,000 order and an enviable business connection was obtained by Wade's firm.

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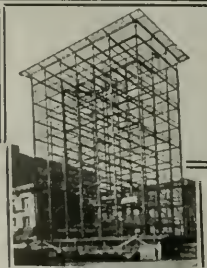

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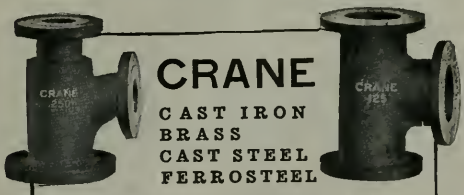

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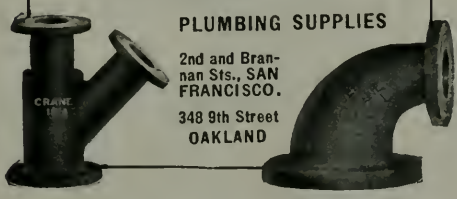

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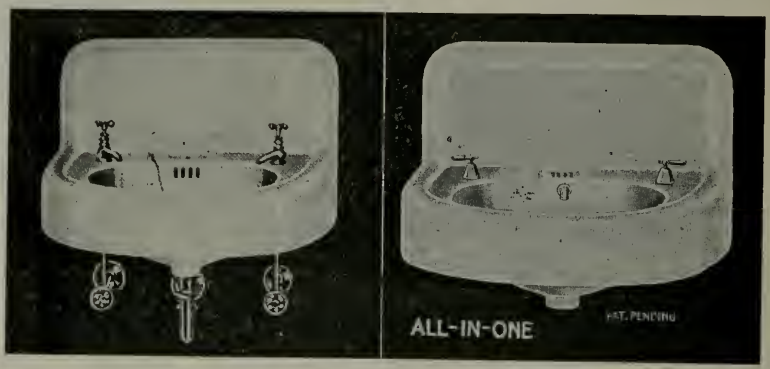

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OCTOBER 1921

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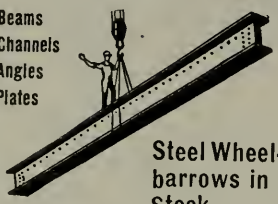

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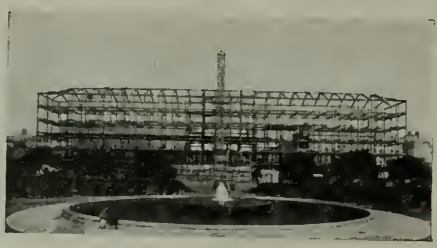

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Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 251 Kearny street, San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 180 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Co., R., Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Del Favero & Rasori, 180 Jessie St., San Francisco.
S. G. Jackson, 351 12th St., Oakland.
Jas. L. McLaughlin, 251 Kearny street, San Francisco.
Alfred H. Vogt, 185 Stevenson street, San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Gunn, Carle & Co., Inc., 444 First street, San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.
Lapidolith, manufactured by L. Sonneborn Sons, Inc., Los Angeles, Portland, and Seattle; 269 Spear street, San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Waterhouse-Wilcox Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Oregon.
Stanley Works, New Britain, Conn. Monadnock Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Drinking Faucet Co., 1808 Harmon St. Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom street, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
Central Electric Company, 185 Stevenson street, San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, and 520 Clunie building, San Francisco.
H. S. Tuttle, 766 Folsom St., San Francisco.
Spencer Electric Co., 355 12th street, Oakland.
Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Garnett Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Western Electric Safety Mfg. Co., Inc., 247 Minna street, San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166 7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom street, San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

ESTIMATOR—BUILDINGS AND ENGINEERING WORKS
Arthur Priddle, 185 Stevenson street, San Francisco.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FENCES—WIRE
Standard Fence Construction Co., 245 Market St., San Francisco, and 310 12th St., Oakland.

PNEUMATIC WATER PRESSURE SYSTEMS

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FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.

FIRE PROOFING
- American Insulex Company, Berkeley Bank Bldg., Berkeley.

FIRE-PROOF DOORS
- Forderer Cornice Works, 269 Potrero avenue, San Francisco.
- U. S. Metal Products Co., 330 10th street, San Francisco.
- Fire Protection Products Co., 3117 20th street, San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Independent Automatic Sprinkler Co., 712 Hearst Building, San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—DUST PROOF CEMENT
- L. Sonneborn Co., 269-271 Spear street, San Francisco.

FLOORS—HARDWOOD
- Oak Flooring Manufacturers' Association of the United States, Ashland Block, Chicago, Ill.
- Parrott & Co., 320 California St., San Francisco.
- Strable Hardwood Company, 511 First street, Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.
- Pacific Heating Company, Second and Grove streets, Oakland.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.
- W. & J. Sloane, 216 Sutter street, San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., Coast Sale offices, San Francisco, Los Angeles and Seattle, Wash
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
- American Window Glass Co., represented by L. H. Butcher Co., 862 Mission st., San Francisco.
- Cobbledick-Kibbe Glass Co., 175 Jessie St., San Francisco.
- Fuller & Goepp, 32 Page St., San Francisco, and Syndicate building, Oakland.
- W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
- Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
- California Granite Co., Gen. Contractors' Ass'n, San Francisco.
- Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

JOHN A. PETERSON, President B. HEINRICH, Vice-President

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GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT
Ellery Arms Co., 583 Market St., San Francisco.
A. G. Spalding & Bros., 625 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Dieckmann Hardwood Lumber Co., San Francisco.
Parrott & Co., 320 California St., San Francisco.
Strable Hardwood Company, First street, near Broadway, Oakland.

HEATERS—AUTOMATIC, GAS, ELECTRIC
Electric Sales Service Co., mfrs. of Therm-elect Water Heater, West Berkeley.
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING CONTRACTOR'S, EQUIPMENT, ETC.
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon streets, San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
C. A. Dunham Co., Sheldon Building, San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Knittle-Cashel Co., 224 Fifth street, San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Moline Heat, Hobart Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
O. M. Simmons Co., 115 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 770 O'Farrell street, San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant streets, San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
L. Sonneborn Sons, Inc., 269-271 Spear street, San Francisco.

INTERIOR DECORATORS
Atherly Bros., 2032 Polk St., San Francisco.
Martin & Frederick, 1374 Sutter St., San Francisco.
John Breuner Co., 281 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
Taylor Galleries, 1635 Broadway, Oakland and San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
A. Quandt & Son, 374 Guerrero street, San Francisco.

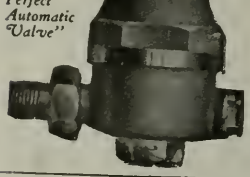
KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.



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LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.
- Pacific Gas & Electric Co., Sutter street, San Francisco.

LIGHTING FIXTURES
- Thomas Day Company, Mission, near Third street, San Francisco.
- Roberts Mfg. Co., 663 Mission St., San Francisco.
- Perfeclite Manufacturing Co., Seattle, Wash.; San Francisco Representatives, Myers & Schwartz, 75 New Montgomery street, San Francisco; 1119 S. Los Angeles street, Los Angeles.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., 562 Mission St., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
- W. & J. Sloane, 216 Sutter street, San Francisco.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Santa Fe Lumber Co., 16 California street, San Francisco.
- Sunset Lumber Company, First and Oak Sts., Oakland.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.
- Smith-Booth-Usher Co., San Francisco and Los Angeles.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Ray Cook Marble Company, foot of Powell street, Oakland.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
- Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.

METAL DOORS AND WINDOWS
- Fire Protection Products Co., 3117 20th St., San Francisco.
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 330 Tenth St., San Francisco.

METAL FURNITURE
- Forderer Cornice Works, 269 Potrero avenue, San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Frank Portman, 1619-20 Mission St., San Francisco.
- Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.

OFFICE EQUIPMENT
- C. F. Weber Co. 985 Market St., San Francisco.
- Rucker-Fuller Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.

OIL BURNERS
- Bunting Iron Works, 1215 First Nat. Bank bldg., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.
- W. S. Ray Manufacturing Co., 29 Spear street, San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE.
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Federal Ornamental Iron and Bronze Co., 16th St. and San Bruno Ave., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
Atherly Bros., 2032 Polk St., San Francisco.
Wayne & Williams, 1914 Fillmore St., San Francisco.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.
A. Quandt & Son. 374 Guerrero street, San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PIPE FITTINGS
Victory Manufacturing Co., Monadnock building, San Francisco.

PLASTER
"Arden" brand, A. C. Robertson, Builders Exchange, San Francisco. U. S. Gypsum Co.

PLAYGROUND APPARATUS
A. G. Spalding & Bros., 625 Market St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Thos. Brodie, 2119 Fillmore street, San Francisco.
Gilley-Schmid Company, 198 Otis street, San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
All-In-One Plumbing Fixture Corporation, 231 Oschner building, Sacramento.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Metals Mfg. Co., 1300 N. Main st., Los Angeles; 216 Hobart building, San Francisco.
Victory Mfg. Co., 423 Monadnock Bldg., San Francisco.
West Coast Porcelain Manufacturers, Rialto building, San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California street, San Francisco.

POWER PLANTS
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PRELIMINARY ESTIMATES, VALUATIONS
Arthur Priddle, 185 Stevenson street, San Francisco.

PUBLIC QUANTITY SURVEY PLAN
Arthur Priddle, 185 Stevenson street, San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
California Hydraulic Engineering & Supply Co., 70 Fremont St., San Francisco.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

QUANTITY SURVEYOR FOR CONTRACTORS
Arthur Priddle, 185 Stevenson street, San Francisco.

RADIATOR TRAPS
C. A. Dunham Co., Sheldon Bldg., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Building, San Francisco.
Gunn, Carle & Co., Inc., 444 Market street, San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Truscon Steel Co., 527 10th St., San Francisco.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, 765 Mission street.

ROOFING CONTRACTORS
Bender Roofing Company, Monadnock Bldg., San Francisco.
Hill, Hubbell & Co., No. 1 Drumm street, San Francisco, and San Fernando Bldg., Los Angeles.

ROOFING AND ROOFING MATERIALS
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SASH AND CABLE CHAINS
Smith & Egge Mfg. Co., Bridgeport, Conn.

SCENIC PAINTING—DROP CURTAINS, ETC.
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C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Forderer Cornice Works, 269 Potrero ave., San Francisco.
Knittle-Cashel Co., 224 Fifth street, San Francisco.
Pacific Heating Company, Second and Grove streets, Oakland.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SHINGLES—STONE
McClenahan Products Co., Inc., 112 Kearny St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

STATIONERY AND SUPPLIES
H. S. Crocker Co., 565 Market street, San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Western Pipe and Steel Co., 444 Market street, San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Moore Shipbuilding Company, Oakland.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Union Construction Co., 604 Mission street, San Francisco, and Key Route Fell, Oaklaud.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL ROLLING DOORS
Pacific Building Materials Co., Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles. Waterhouse-Wilcox Co., San Francisco.
Rolph, Mills & Co., San Francisco, Los Angeles, Portland and Seattle.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Lupton" steel sash, Waterhouse-Wilcox Co., agts., San Francisco, Los Angeles and San Diego.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.
Truscon Steel Company, 527 Tenth street, San Francisco.

STORE FRONTS
The Kawneer Manufacturing Company, West Berkeley, California.
Zouri Safety Sash Bars—Cobbledick-Kibbe Glass Company, 175 Jessie St., San Francisco.

STUDDING—FIREPROOF STEEL
Steel Studding Company, 1216 Folsom St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.
Western Electric Safety Switch Co., Inc., 247 Minna street, San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market street, San Francisco.
Rucker-Fuller Desk Co., 677 Mission street, San Francisco.

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GLASS—Wholesale Only—GLASS
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILE FOR ROOFS
Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
S. & S. Tile Co., 4th and Carrie streets, San Jose.
United Materials Co., Sharon Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.

VALVES—PIPES AND FITTINGS
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Co., 115 Mission St., San Francisco.
H. Mueller Mfg. Co., 635 Mission street, San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco
Victory Manufacturing Co., Monadnock building, San Francisco.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.
Everlasting Blow-off Valves. General Machinery and Supply Co., 39 Stevenson street, San Francisco.

VARNISHES
Bass-Hueter Paint Company, Mission, near 4th street, San Francisco, and all principal coast cities.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, Rialto Building, San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.

WALL PAPER AND DRAPERIES
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Gunn, Carle & Co., Inc., "Hydrate," 444 Market street, San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SASH CHAIN
The Smith & Egge Mfg. Co., Bridgeport, Conn.

WINDOW SHADES
National Window Shade Co., Inc., 244 Eddy Street, San Francisco.
W. & J. Sloane, 216 Sutter street, San Francisco.
D. N. & E. Walter, 562 Mission street, San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
The Kawneer Company, West Berkeley, California. (Simplex Fixtures.)
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FENCE
Standard Fence Co., 245 Market street, San Francisco; and 310 12th street, Oakland.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 827 Mission St., San Francisco.

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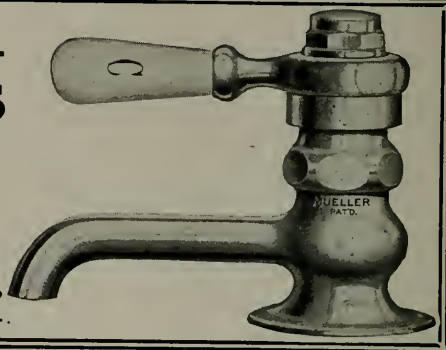

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The purchase of inferior Oak Flooring at low prices is a false economy against which you want to protect your clients.

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The low quality Japanese oak sold in this country is a poor substitute for the American. It not only lacks the grain or flower which make American oak so beautiful, but it also lacks its strength.

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This trade-mark, stamped on every stick, is always a guarantee to you and to your clients of American-grown Oak Flooring of the highest quality.

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Insist upon its trade-mark when specifying Oak Floors.

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Upon request we will mail booklets outlining our educational and other work for Oak Floors, which you will find interesting and valuable in the practice of your profession.

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See page 389, Sweet's Catalogue, for specifications of various grades.

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Stewart Mixer
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Sizes
4 cu. ft. and 7 cu. ft. of
mixed concrete.

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And there's one thing more to add—they're
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Thirty years at least for Redwood—
Ask your lumber dealer

A Redwood tree which has lived a thousand years or more in the fog belt of the Pacific Coast, retains its resistance to the weather even after it is manufactured into staves and exposed once more to the elements in the form of a tank or silo.

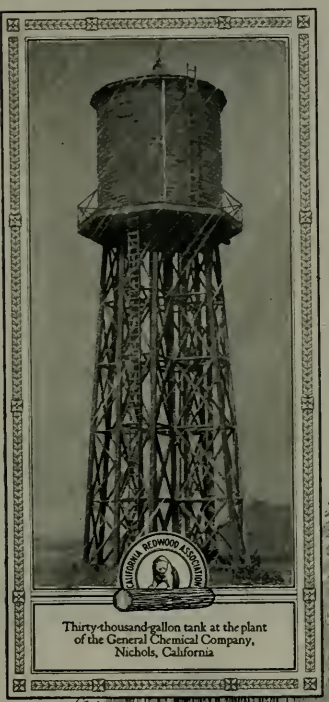
Thousands of Redwood tanks have lasted thirty and forty years. Just *how* long this remarkable wood will last nobody knows, because the original installations have not yet suffered decay. This is due to the natural acid which protects Redwood from attacks of insects and decay-producing fungi. When properly dried, Redwood shrinks less than any other wood. No upkeep is required other than an occasional tightening of the rods during the first two or three seasons.

Redwood is also being used increasingly for interior finish, as its rich variety of tone and grain, its freedom from pitch and resin and its easy workability make possible many beautiful effects.

To learn in detail the story of this most interesting of woods, go to your architect, building contractor, or lumber dealer and ask

"What about Redwood?"

Redwood is unequalled for the special uses to which it is best adapted, and for these uses the available supply is adequate for generations. Meanwhile, according to U.S. Forest Service Bulletin 38, merchantable second-growth Redwood is produced in less than sixty years by natural growth from the stump.



Thirty-thousand-gallon tank at the plant of the General Chemical Company, Nichols, California

This advertisement is appearing in the October issue of Atlantic Monthly, Century, Harpers, Scribners, The Review of Reviews, World's Work and Sunset Magazine.

THIS advertisement is written with just one purpose in mind: to send prospective home-builders to their logical technical advisers—the architect, the building contractor and the lumber dealer—with a question: "What About Redwood?" You can answer this question, and it is your opportunity to secure a client or a customer. Complete information, prices and specifications may be obtained by addressing any of the sales and distributing branches listed below:

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The Pacific Lumber Company, 311 California Street, San Francisco, and Central Bldg., Los Angeles, California.

The Pacific Lumber Co., of Illinois, 522 Fifth Ave., New York City; McCormick Bldg., 322 S. Michigan Ave., Chicago, Ill.; Grand Ave., Temple Bldg., Kansas City, Mo.
Union Lumber Company, (representing two additional producing companies†), Crocker Bldg., San Francisco; Merchants National Bank Bldg., Los Angeles, Calif.; 2850 Grand Central Terminal Bldg., New York City; McCormick Bldg., Chicago, Ill.

MEMBER COMPANIES (*San Francisco Offices*)

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*Hobbs, Wall & Company
*Holmes, Eureka Lumber Company
*Little River Redwood Company
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Union Lumber Company
*Northwestern Redwood Company
The Pacific Lumber Company

The WEBSTER HOTEL
CHICAGO, ILL.
Architect, Walter W. Ahlschlager
Engineers, Fridstein & Co.
Glazed by Sharp, Partridge & Co.

Pacific Coast Sales Representatives
THE L. H. BUTCHER COMPANY
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923 Santa Fe Ave., Los Angeles, Calif.
1018 Fourth Ave., So. - Seattle, Wash.
624 Henry Building, - Portland, Ore.

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Distinctly a quality product, American Window Glass meets exacting requirements in double or single strength. Its evenness and freedom from imperfections invariably win it preference.

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Lupton Counterbalanced Sash
Lupton School House Sash
Lupton Steel Partition and Doors
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*In Warehouse Stock

When writing to Advertisers please mention this magazine.

Stanford Court Apartment, San Francisco, California

PERHAPS one of the most imposing structures in San Francisco is the Stanford Court Apartments. Needless to go into detail concerning the character of this building. When the owner decided to redecorate, he investigated Paints and Varnishes thoroughly, selecting the following *Fuller* products:

Fuller's Concreta was used for the exterior as well as for the inner court, or patio; *Fuller's Pacific Rubber Paint* was used for all sash work; *Fuller's Ravenite Metal Paint* was applied as a preservative and beautifier for all fire escapes.

As stated above, this imposing apartment house would do credit to any large city and we are modestly claiming that a small part of this ensemble is due to *Fuller Products*.

W. P. FULLER & CO.

"Since '49."

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"Most Satisfactory Building of its Kind in America"

THUS have such authorities as ex-President Taft and Bishop Nicholson designated Lawrence Memorial Chapel, built in 1917 and seating 2,300.

Medusa Stainless White Cement was used in the entire outside finish. The imposing columns along the portico are of Medusa Gray and White Cement. The chaste, beautiful decorative work is of cast cement, approximating the appearance of genuine cut stone.

For immediate beauty and permanent effects in stucco and all ornamental cement work, architects should specify "Medusa Stainless White Cement, *Waterproofed.*" Our White not only retains its freshness remarkably, but may be renewed whenever soiled by exposure, simply by scrubbing with soap and water.

The addition of Medusa Waterproofing renders the mass impermeable to moisture, for all time. We furnish Medusa Waterproofing in powder or paste, or ready mixed in correct proportions with Medusa Stainless White Cement.

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PACIFIC COAST DISTRIBUTORS—Pacific Materials Co., San Francisco, Cal. Riverside Portland Cement Co., Los Angeles, Cal. A. McMillan & Company, Portland, Ore. Galbraith & Company, Seattle, Wash.

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UNDER MANAGEMENT OF
Thos J. Coleman

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The Ford is a valuable ally of the business concern and indispensable to the salesman or the sales force that wishes to cover an extensive territory at the least cost and with the greatest speed.

For eighteen years, we have catered to the needs of the Ford buying public. In our new location and our new building at 11th and Market streets we are in a better position than ever to serve.

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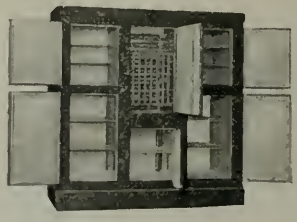

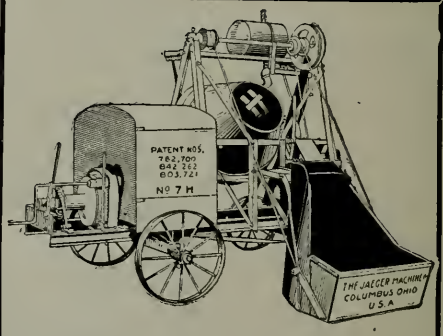

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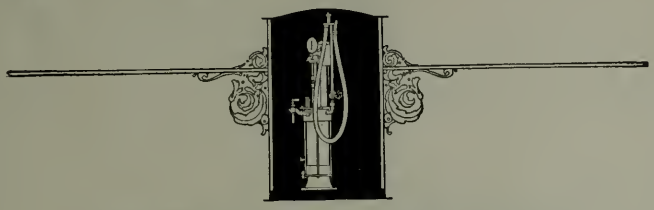

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Old Style All-in-One Lavatory

BOTH lavatories are of the same type, the popular priced lavatory so much in use in the average bathroom of today; both sell for the same price—but in all other respects they are entirely different.

The old style lavatory has exposed metal parts and pipes underneath—the All-in-One Lavatory has no exposed metal parts, the entire fixture being finished in white enamel. The old style lavatory has two outlets, one for hot water and one for cold—the All-in-One, only one outlet with a special mixing device that blends the hot and cold water, enabling one to wash in running water of the correct temperature. The old style lavatory has a plug and chain—the All-in-One, a patented waste plug with spring and cap.

The All-in-One Lavatory eliminates all of these exposed metal parts and connecting joints by casting the hot and cold water inlets, waste pipe, overflow integral, faucets and soap cup with the fixture itself. It can be installed much more quickly than the old style fixture as there is only one connection to be made. It is much more attractive and is far easier to keep clean—and it costs no more than the old style lavatory.

All-in-One Lavatories are made in all the different styles. All-in-One Bathtubs are designed on the same principle and are made in all sizes and styles. Let us send you Free illustrated catalog fully describing All-in-One Plumbing Fixtures.

All-in-One Plumbing Fixture Corp.

231 Ochsner Building

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Slidetite GARAGE DOOR HARDWARE

Is being accepted by America's leading architects as the most satisfying door hanging equipment to be had today. The sliding-folding idea saves time, space, and, in the long run, money. There are no joints to obstruct the smooth operation of a "Slidetite" equipped door. For one opening or a dozen, specify "Slidetite" and you are sure to please your client.

WRITE NOW FOR OUR CATALOG OA 22

Richards-Wilcox Mfg. Co.

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Pitcher Door Hangers

HUMPHREY APARTMENTS, SAN FRANCISCO
C. A. MEUSSDORFFER, Architect
Equipped with PITCHER HANGERS.

Give Service Satisfaction

Are Dependable Durable and Economical

No extra thickness of wall required. Installed in 5½ inch partitions. Specify sliding doors in place of swinging doors.

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National Mill and Lumber Company

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SAN FRANCISCO

Your Client, Mr. Architect Demands

Snow White Brilliance

Upon a Smooth Surface

¶ Petrium Sanitary Sinks answer every requirement. They are non-porous, non-absorbent and lye-proof. There are no crevices or corners to catch the dirt and grease. ¶ Therefore Specify this sink. ¶ Can be installed in any home or apartment — new or old. A California product.

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Petrium Sanitary Sink Company

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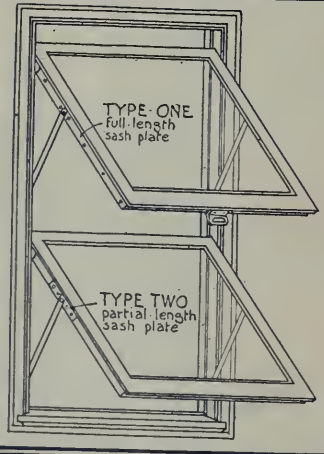

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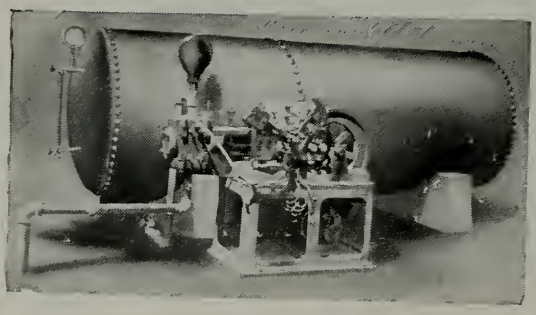

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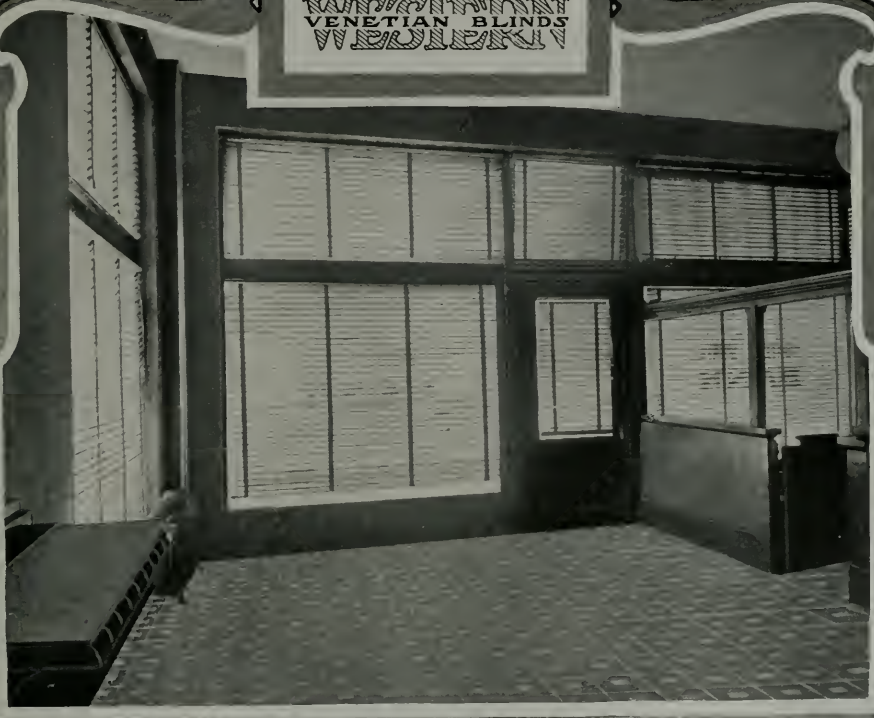

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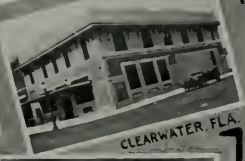

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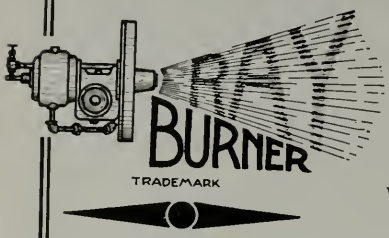

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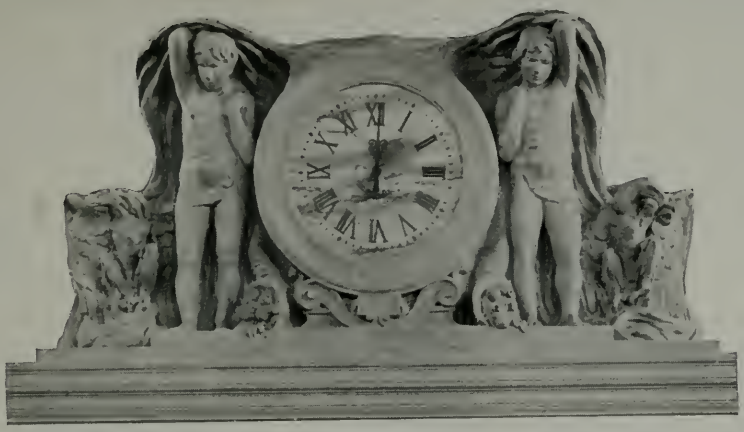

THE ARCHITECT AND ENGINEER

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DON LEE BUILDING, SAN FRANCISCO
WEEKS & DAY, ARCHITECTS

Frontispiece
The Architect and Engineer
for October, 1921

THE
ARCHITECT
AND
ENGINEER

OCTOBER
1921

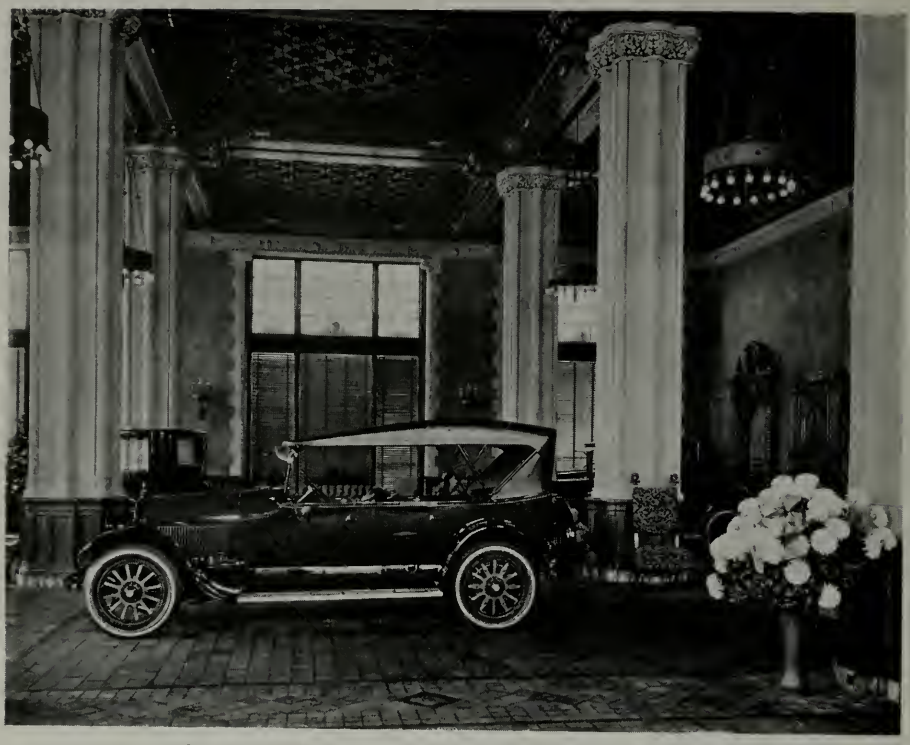
Vol. LXVII
No. 1

The Don Lee Building, San Francisco

By IRVING F. MORROW

ANYONE disposed to be dispirited by the ruthlessness of the machine in ousting humanity from human affairs is inclined to sit up and take notice at the sight of a building such as this one. It is a direct challenge to the generally assumed competency of facts and figures to exclusive dominance in practical matters. In those realms of business where luxury ministers to the personal comfort or vanity of an ostentatiously leisurely clientele, or where it constitutes an effective guarantee of the pecuniary pretensions of an institution or enterprise, a certain amount, sometimes a lavish amount, of decorative unessentials is expected and demanded. Hotels and theatres of the higher class, exclusive shops and eating places, banks and insurance organizations, have long accepted beauty (interpreted, it may be, under the teutelage of pecuniary canons of taste) as a tangible asset. The like attitude, although by no means an innovation, is at least a rarity on the more specifically industrial plane, where the tendency of current prejudices is toward an *a priori* identification of aesthetic ineptitude with practical efficiency. Now this building is a garage, loft building, and automobile sales room. It is true that as a show room for cars of the highest class it might be deemed accountable to pecuniary canons of taste as above mentioned. But this is to overlook the tenacity of traditional industrial prejudice, which assumes as an article of faith that an automobile can not be driven through a well-proportioned opening, nor displayed and sold in surroundings suitable to be used in any of the more specifically human affairs of life.

It is therefore a subject for considerable surprise and no less hope to encounter a practical demonstration that cars may be freely moved and indefinitely stationed in the closest juxtaposition to architectural amenities



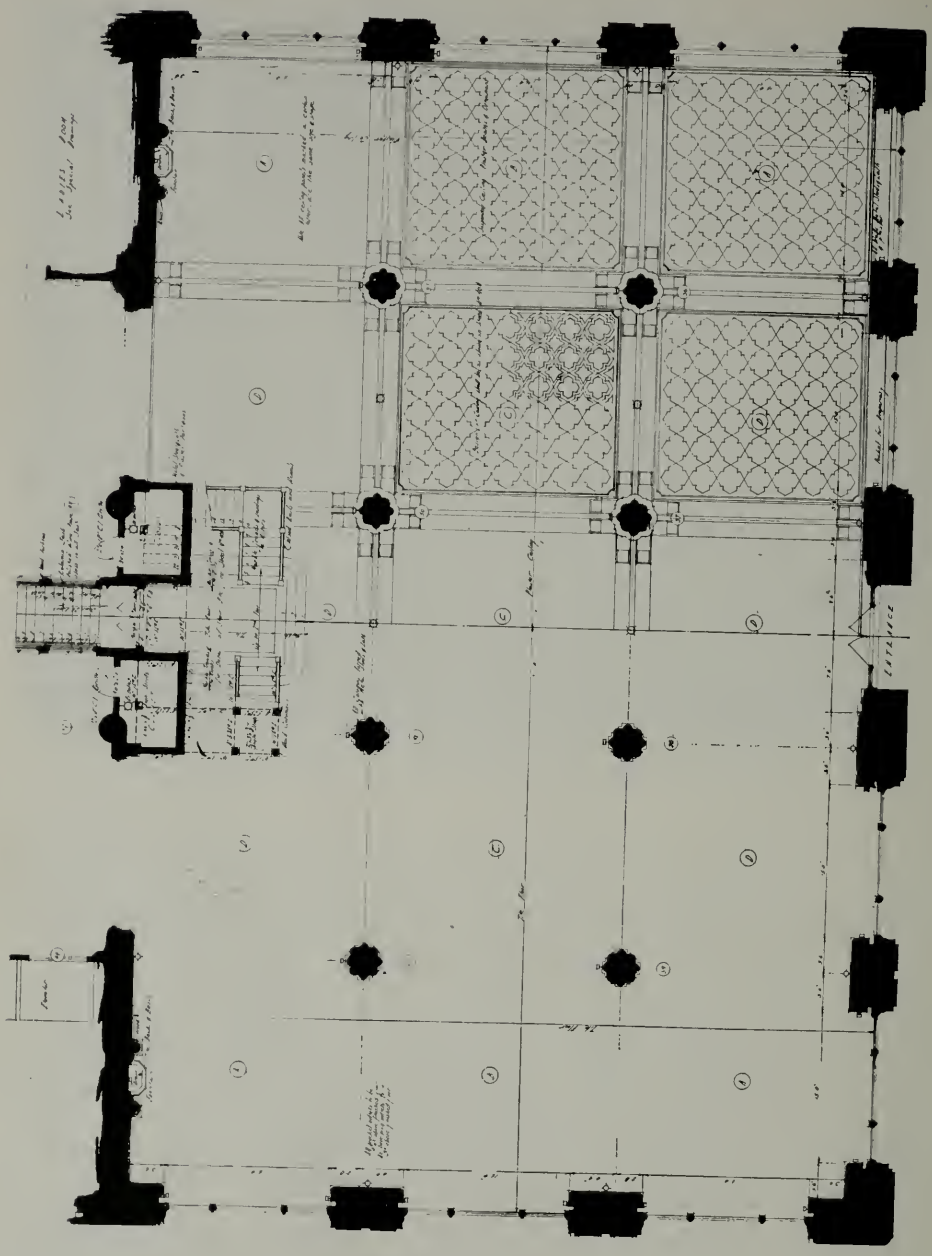
SHOW ROOM, DON LEE BUILDING, SAN FRANCISCO
Weeks & Day, Architects

and proprieties and suffer no diminution in efficiency and salability thereby; it being unreasonable to suppose that the new building has induced any hesitancy in prospective purchasers of Cadillac cars in San Francisco, or that such a result was anticipated from its erection. It is a tacit admission that even on (or near) the commercial and industrial plane man shall not live by bread alone. Obvious expenditure has been made for elements and features which contribute solely to the agreeableness of the building over and above its physical efficiency. And it is no small part of the merit of the course followed and the propriety of the result attained that this expenditure for amenities is obvious, and has been distributed with a sure appreciation of its efficiency in its own particular sphere. Neither plastic ornament nor costly materials have been relegated to any of those positions traditionally decorated, but in fact beyond the appreciation, or even the apprehension, of any save the idly curious. All that has been expended has been accounted for to the ordinary, even the casual, observer, and running and reading and are made compatible; which is reasonable and proper for work purely commercial in use and intent.

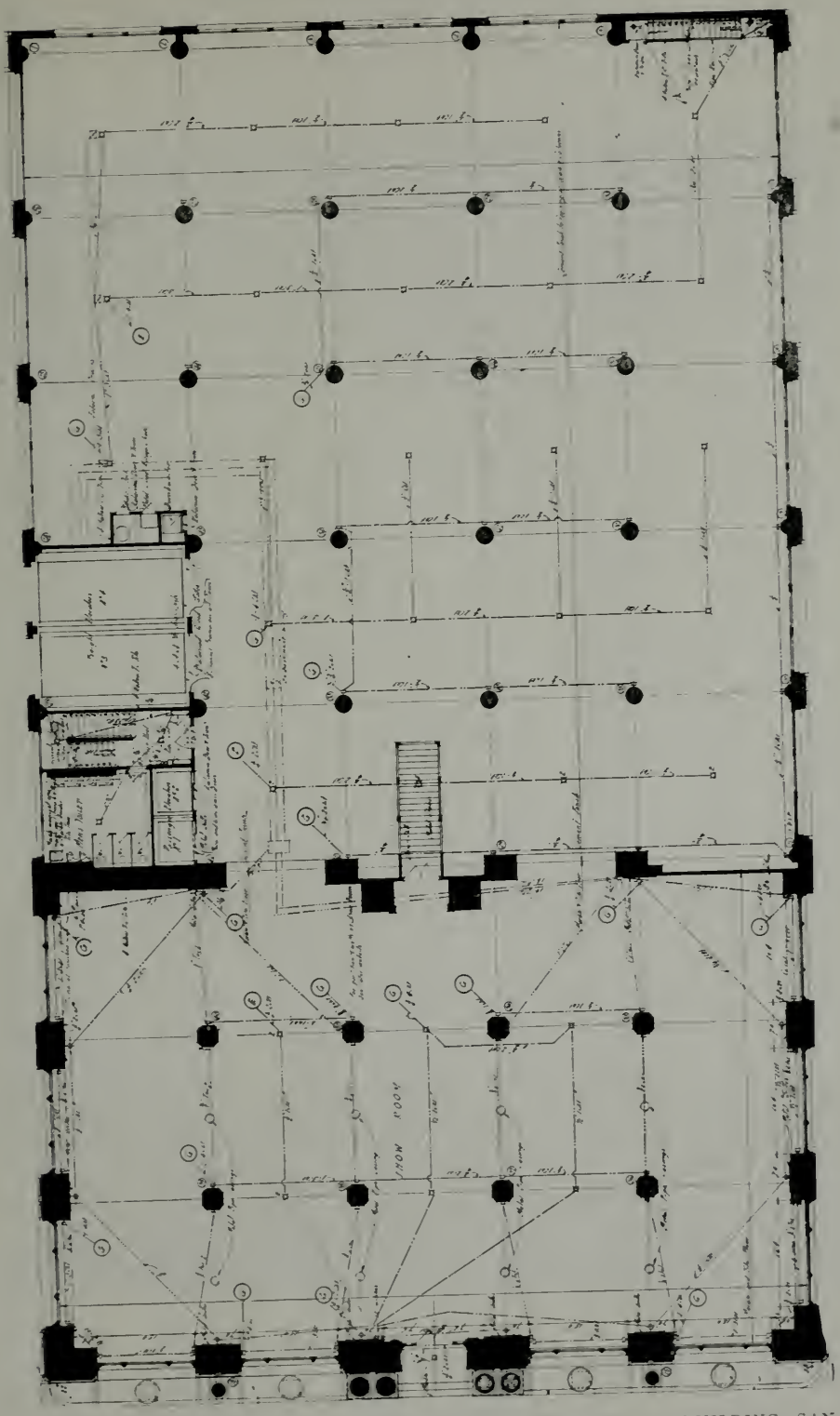
So successful an assault of the spirit on the stronghold of materialism may conceivably induce an uncritical enthusiasm prone to overlook less prominent aesthetic shortcomings. From these it is only just to admit that the building is not free; the most serious specific ones being a rigidity and lack of subtlety in the window openings and the pier and spandril system the upper floors (but after all it is a loft building). There is also the question, more abstract but more fundamental in its bearing, whether the fulfillment of

SHOW ROOM, DON LEE BUILDING, SAN FRANCISCO
Weeks & Day, Architects

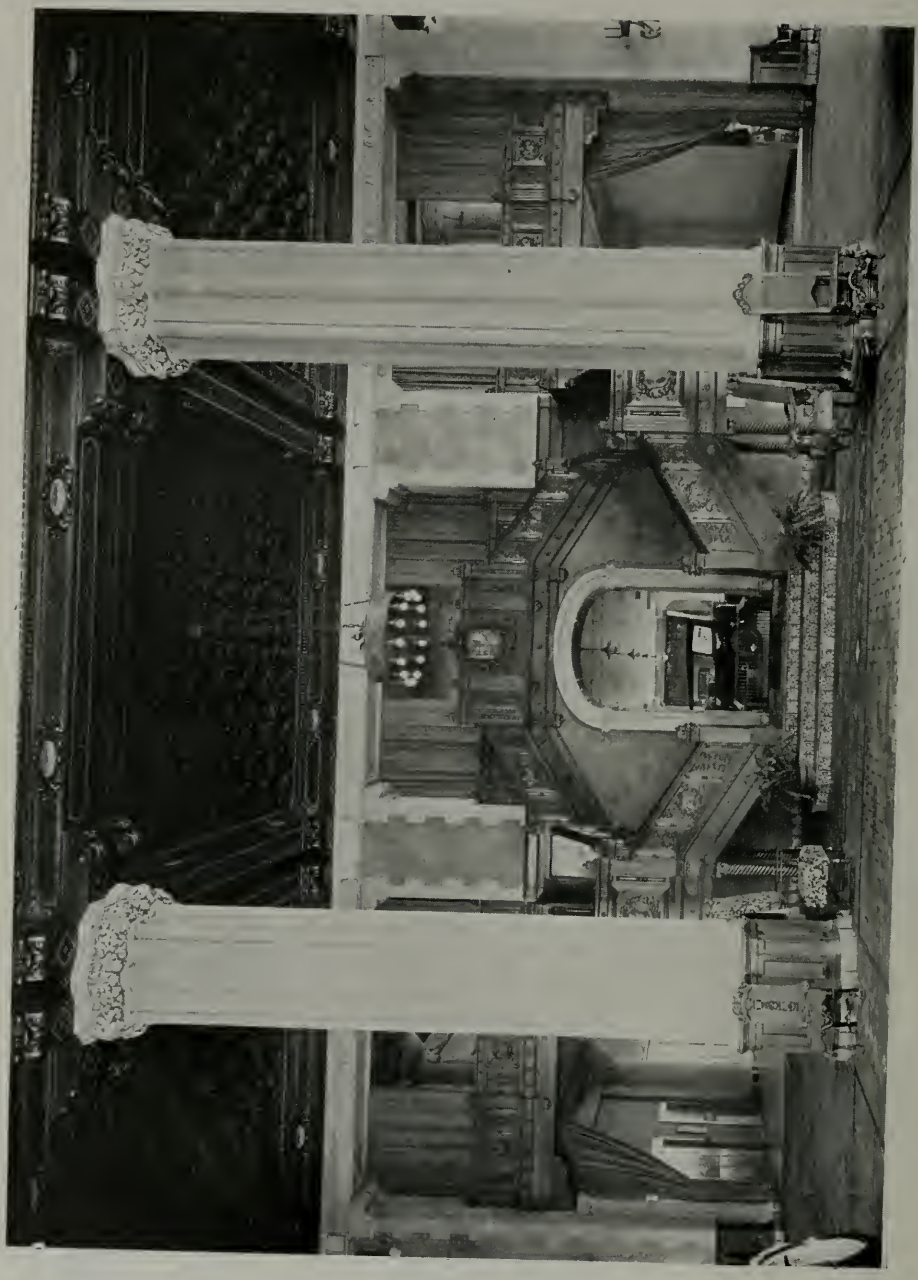
specifically modern needs by specifically modern structures is most directly and appropriately expressed by recourse to decorative systems developed under the impact of very foreign circumstances and for widely differing purposes. But this leads into matters of philosophy and aesthetics too intricate and far-reaching for discussion here. In the actual presence of the building all of these objections, whatever weight they may be entitled to on theoretical grounds, are negligible in the face of the favorable interest evoked by the vitality of the design, its generous scale, its uniformly consistent treatment and accomplished execution. Particularly grateful is the rich but mellow polychrome which prevades exterior and interior alike; practical evidence that, however valid the compulsion under which cars themselves must be decorated with the impeccable dignity of hearses, it is not essential that their sale should be negociated in the chill of mortuary gravity. The imputation of color interest and harmony as one of the chief merits of the building will require a word of explanation for the benefit of those whose knowledge of it is confined to the photographs. It is well known that the camera refuses to accept colors at their face value. The result, therefore, of photographing varied colors and textures, all in new finish, is an insistence on false and erratic values which may suggest an element of the complacent audacity and impudence of the smart moving picture setting, where in reality there is rich and complete harmony. In fact, the color treatment of the large show room is, along with its fine scale and airiness, the chief merit of the building.



PLAN OF SHOW ROOM, SHOWING CEILING, DON LEE BUILDING, SAN FRANCISCO. WEEKS & DAY, ARCHITECTS



FIRST FLOOR PLAN, DON LEE BUILDING, SAN FRANCISCO. WEEKS & DAY, ARCHITECTS



SHOW ROOM, DON LEE BUILDING, SAN FRANCISCO
WEEKS & DAY, ARCHITECTS

MAIN ENTRANCE, DON LEE BUILDING, SAN FRANCISCO
WEEKS & DAY, ARCHITECTS

Architectural terra cotta, including sculptured group over main entrance, executed by N. Clark & Son, San Francisco.

SHOW ROOM, DON LEE BUILDING, SAN FRANCISCO
WEEKS & DAY, ARCHITECTS
Tile fountain made by S. & S. Tile Company, San Jose.

MAIN ENTRANCE, DON LEE BUILDING, SAN FRANCISCO
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ENTRANCE, HOUSE FOR MR. FRANK KALES, ALAMEDA, CAL.
Sidney B. & Noble Newsom, Architects

Colonial Feeling in California Houses

THE characteristic development of domestic architecture in California has been on Spanish models. The Spaniards were the first civilized inhabitants, and naturally built in the manner familiar to them at home. This was made all the easier by the coincidence that the country itself was more or less similar to their home country, and hence already in harmony with what they had to bring. As a result the Spanish influence has never died out, but has continued to dominate long after they ceased to be a factor in the community themselves. Large plaster wall surfaces, tiled roofs, window grilles, patios, and long, low buildings characterize what one thinks of as the typically Californian house.

ENTRANCE, HOUSE FOR MR. LELAND D. ADAMS, PIEDMONT, CAL.
Sidney B. & Noble Newsom, Architects

Along with this main current there have been two other lines of development. One is what is called the California bungalow. This may be difficult to define, but is generally understood. Perhaps it owes its origin to certain features of the Spanish style; but through adaption to other conditions and translation into other materials there has developed something quite different from the original Spanish.

The other line of development is the Eastern Colonial. Both in associations and in appropriateness with its surroundings this seems on first sight much less natural to California than those types derived from the

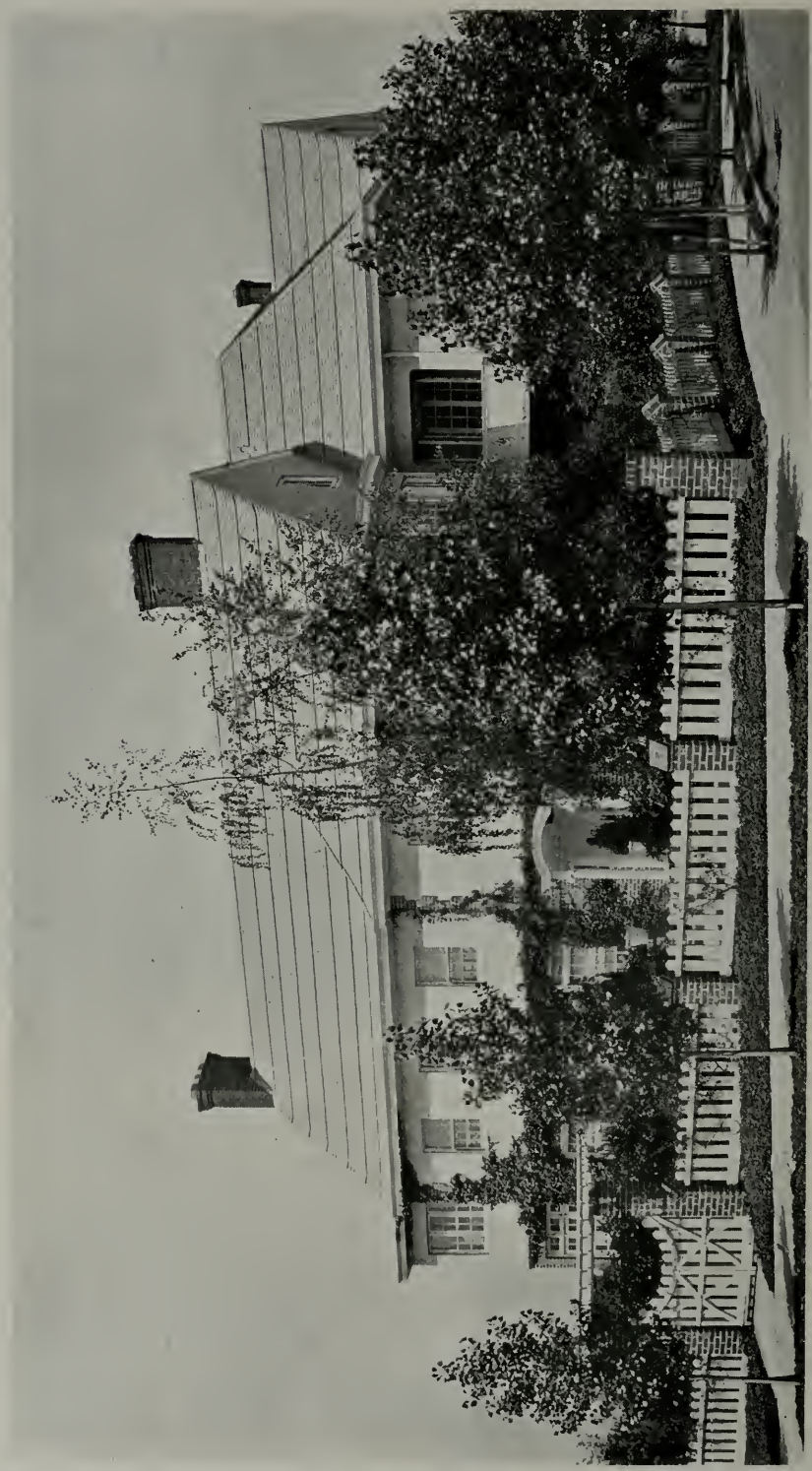
ENTRANCE HALL, HOUSE FOR MR. LELAND D. ADAMS, PIEDMONT, CAL.
Sidney B. & Noble Newsom, Architects

styles of Southern, or Mediterranean Europe. Nevertheless it has made marked progress and come into considerable vogue in California, possibly more in the northern than in the southern part of the state. In using this style architects have in the main shown skill in adapting it to the new situations, instead of directly copying Atlantic Coast models. As a result one may truly say that Colonial has become acclimated.

The best and most characteristic of the work of Messrs. Sidney B. & Noble Newsom is based on this Colonial tradition of the Atlantic Coast. But in almost every instance it has undergone a certain amount of adaptation to bring it into harmony with the new surroundings. The Kales house alone, perhaps, looks a bit eastern; but, being located in the midst of

ENTRANCE HALL, HOUSE FOR MR. FRANK KALES, ALAMEDA, CAL.
Sidney B. & Noble Newsom, Architects

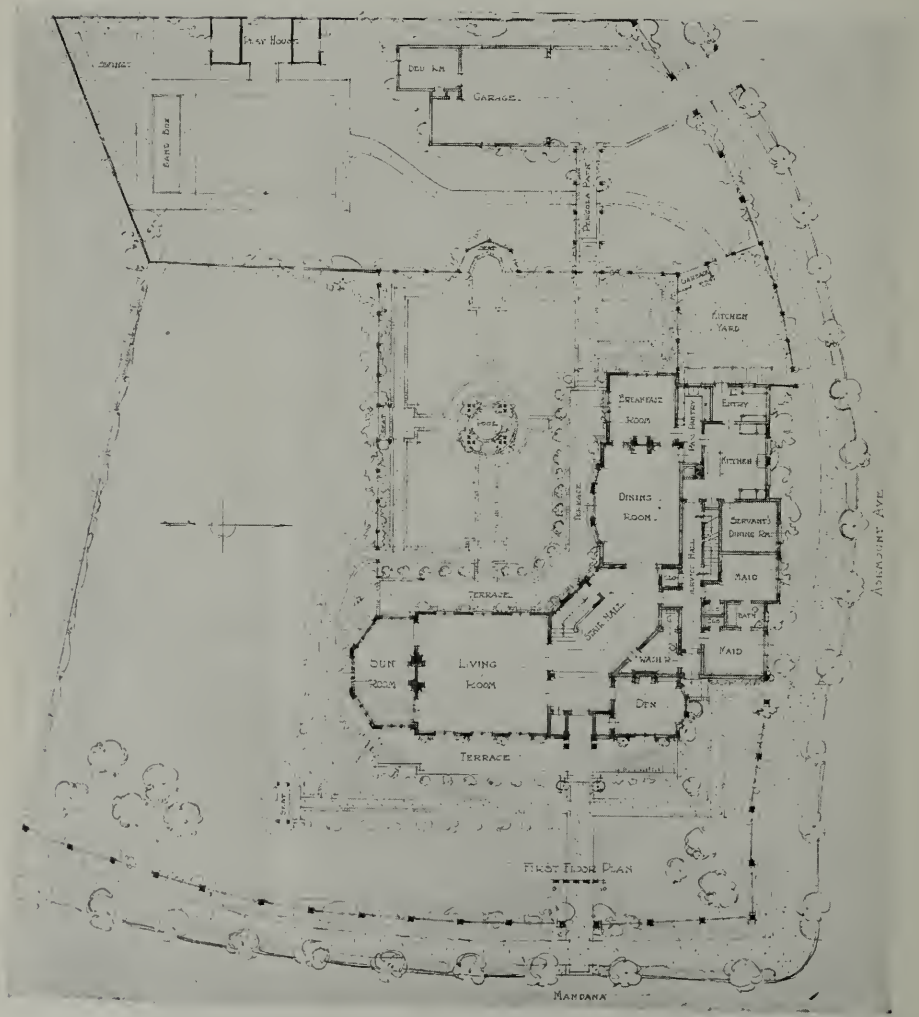
a flat and closely-built residence district, it does not impress one as inappropriate. The Adams house, located in a more open and rolling suburban area, is much more free in treatment. Its Colonial ancestry is plain, but it has become none the less Californian. The Kruse house, although under oak trees and on a steep hillside, finds itself quite at home. The Newsom house and the house in Thousand Oaks are more reminiscent of the English countryside or village. The Newsom house in particular nestles very delightfully among the trees. The house in Piedmont is the only one which inclines toward the Spanish type, and has a quiet charm. The plans are all compact and practical, and very livable as well.



HOUSE FOR MR. LELAND D. ADAMS, OAKLAND, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

HOUSE FOR MR. LELAND D. ADAMS, OAKLAND, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE FOR MR. LELAND D. ADAMS, OAKLAND, CAL. SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

HOUSE FOR MR. FRANK KALES, ALAMEDA, CAL.
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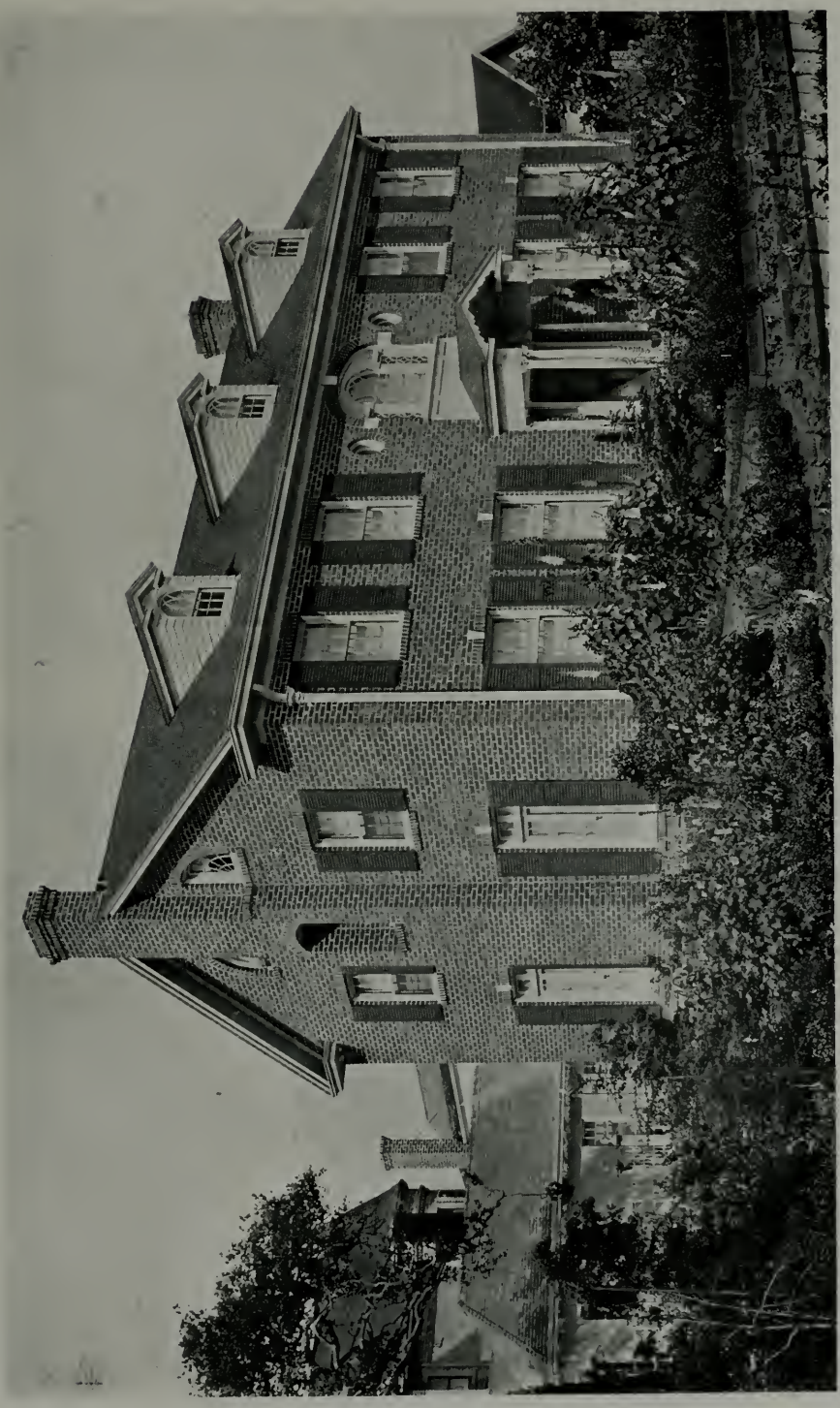
HOUSE FOR DR. C. A. KRUSE, BERKELEY, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS



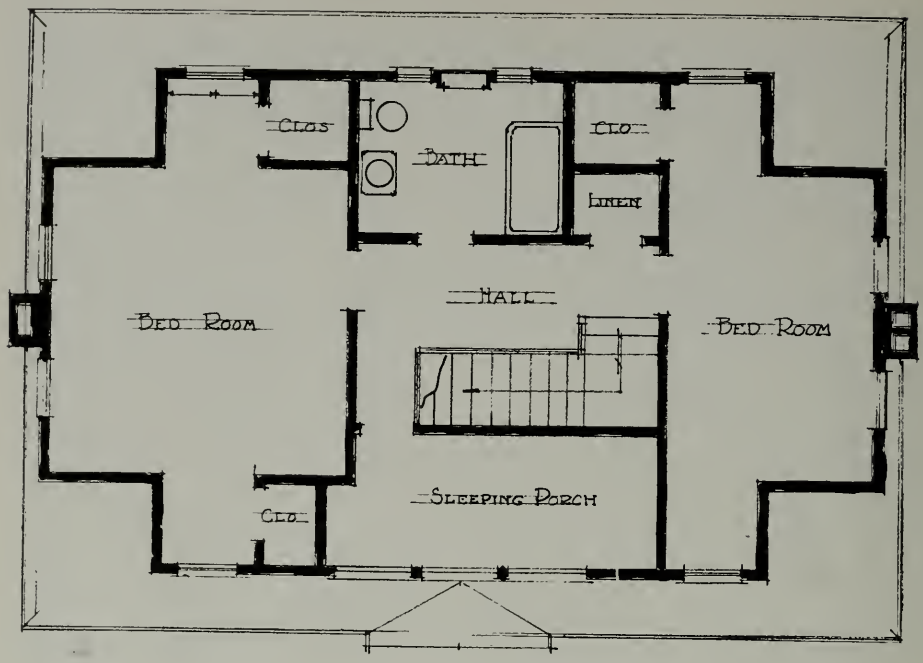
HOUSE FOR MR. FRANK KALES, ALAMEDA, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

LIVING ROOM

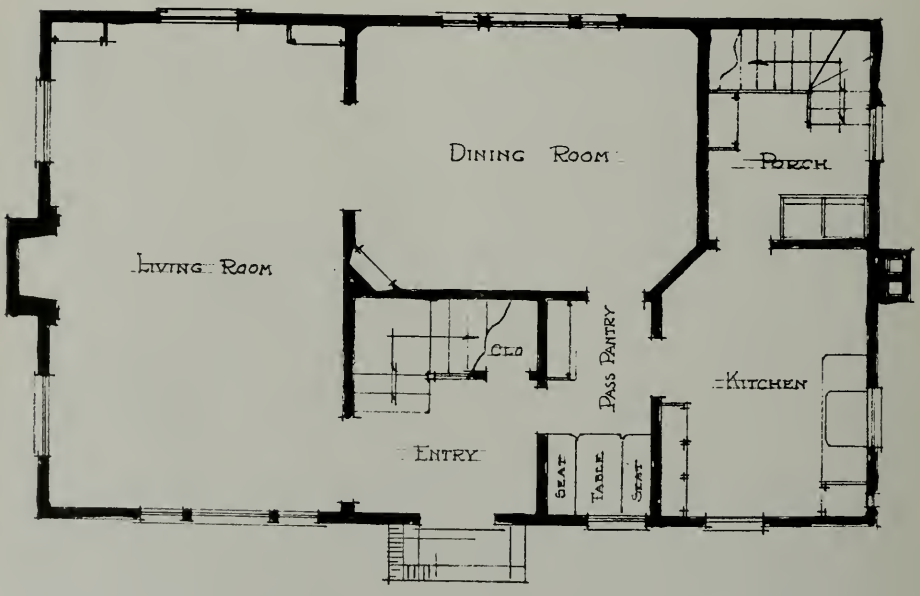
DINING ROOM, HOUSE FOR MR. FRANK KALES, ALAMEDA, CAL.
Sidney B. & Noble Newsom, Architects

HOUSE FOR MRS. C. C. CLAY, PIEDMONT, CAL.
Sidney B. & Noble Newsom, Architects

HOUSE IN THOUSAND OAKS, BERKELEY, CAL.
Sidney B. & Noble Newsom, Architects



SECOND FLOOR



FIRST FLOOR

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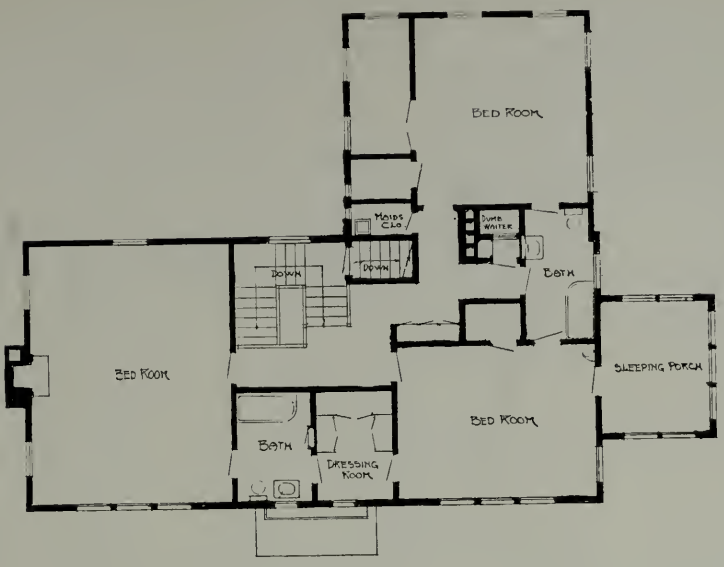
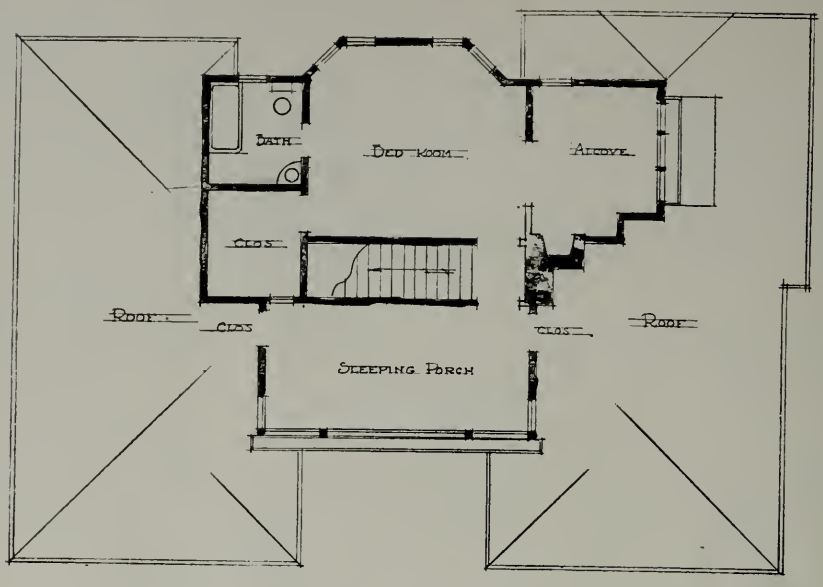
HOUSE FOR DR. C. A. KRUSE, BERKELEY, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS



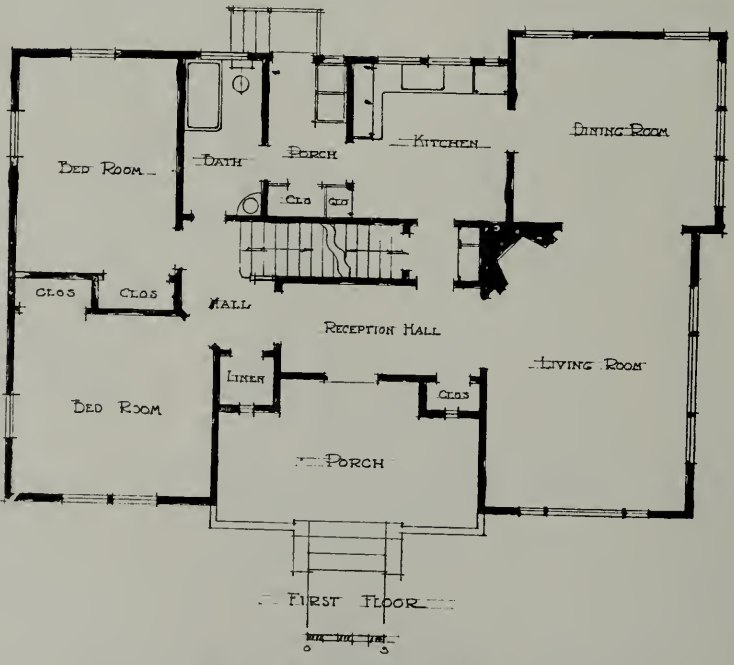
SECOND FLOOR PLAN

FIRST FLOOR PLAN

HOUSE FOR MRS. C. C. CLAY, PIEDMONT, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS



SECOND FLOOR PLAN.



HOUSE IN THOUSAND OAKS, BERKELEY, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

FIRST FLOOR PLAN, HOUSE FOR MRS. NOBLE NEWSOM, BERKELEY, CALIFORNIA. SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

HOUSE FOR MRS. NOBLE NEWSOM, BERKELEY, CAL.
SIDNEY B. & NOBLE NEWSOM, ARCHITECTS

HOUSE FOR MRS. NOBLE NEWSOM, BERKELEY, CAL.
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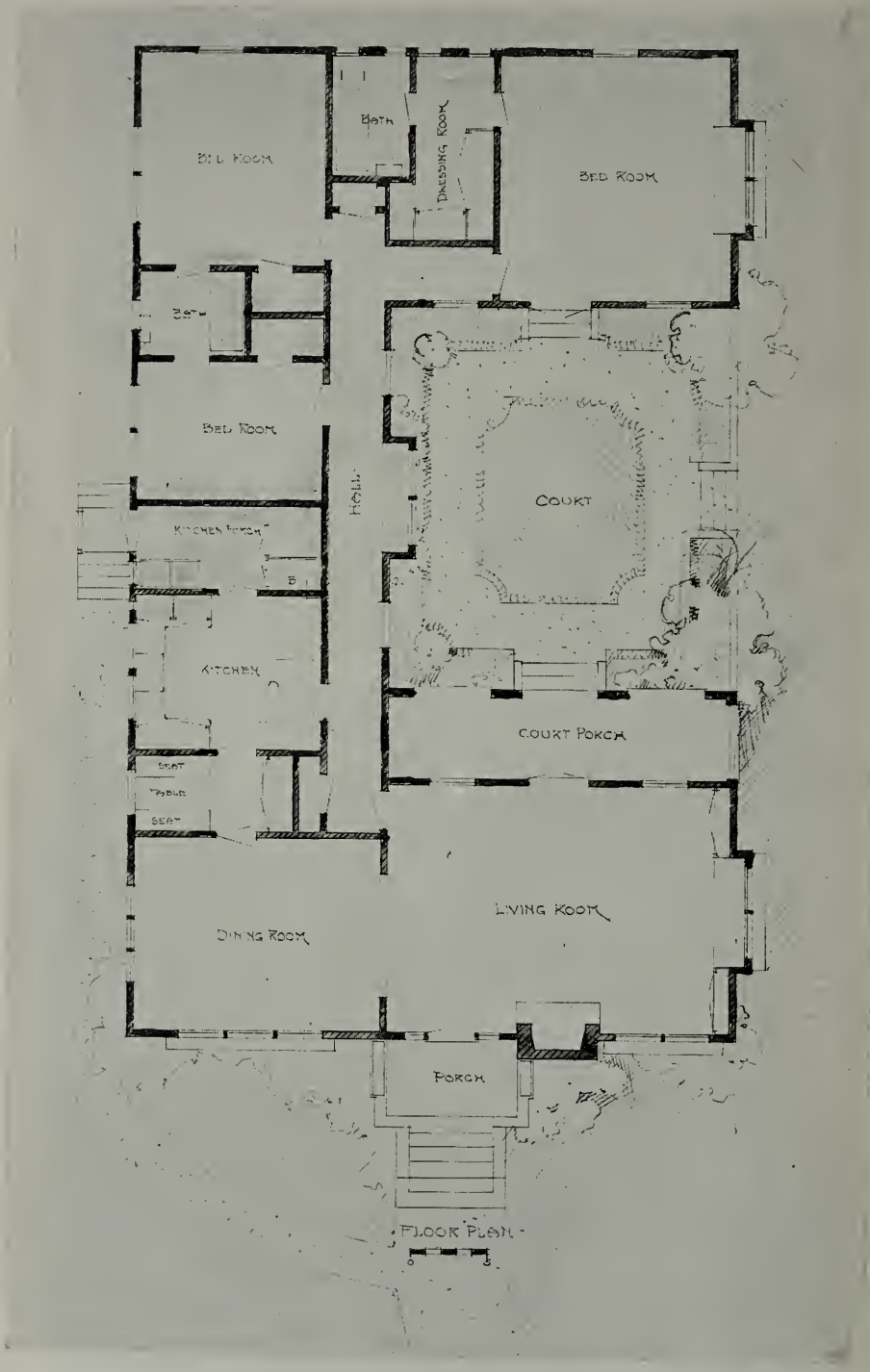


HOUSE IN PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE AT PIEDMONT, CALIFORNIA
Sidney B. & Noble Newsom, Architects

HOUSE AT PIEDMONT, CALIFORNIA
Sidney B. & Noble Newsom, Architects

The Ideal City

By MAYO FESLER in "Americanization."

A city, sanitary, convenient, substantial;

Where the houses of the rich and poor are alike—comfortable and beautiful;

Where the streets are clean and the sky line is clear as country air;

Where the architectural excellence of its buildings adds beauty and dignity to its streets;

Where parks and playgrounds are within reach of every child;

Where living is pleasant, toil honorable and recreation plentiful;

Where capital is respected, but not worshipped;

Where commerce in goods is great, but no greater than the interchange of ideas;

Where industry thrives and brings prosperity alike to employer and employed;

Where education and art have a place in every home;

Where worth and not wealth give standing to men;

Where the power of character lifts men to leadership;

Where interest in public affairs is a test of citizenship and devotion to the public weal is a badge of honor;

Where government is always honest and efficient and the principles of democracy find their fullest and truest expression;

Where the people of all the earth can come and be blended into one community life, and where each generation will vie with the past to transmit to the next a city greater, better and more beautiful than the last.

*

* *

Painting Iron and Steel Surfaces

FACTS regarding the painting of iron and steel of value to builders and contractors have been developed by a committee of the American Society of Testing Materials from an elaborate series of field tests. The following important points have been developed:

1. The thorough methods of preparation, i. e., sand blasting and pickling, show no superiority over ordinary methods of removing loose scale, rust and dirt by scraping, brushing and wiping. This applies to both new steel and old steel which has been in service.

2. Weathering to permit loosening and partial removing of mill scale before painting is inimical to preservation.

3. Painting in a cold dry atmosphere gives results as good as in warm dry atmosphere, or on heated steel. (This may be due to the greater thickness of coatings applied in the cold atmosphere.)

4. The preparation of old painted steel surfaces which have bare rusted spots, by brush coating with benzine over and around the rust spots, burning the benzine off and then scraping and wire brushing, gives better results than scraping and wire brushing without the benzine treatment, and better results than sand blasting.

5. There is no difference observable in the results of the application of the same methods to old and to new steel.

Writing the Specification

By LOUIS R. HOLSKE

IT may be well to open this article with some remarks on the preparation necessary to enable one to write a specification, so that the intent of the specification may be readily grasped by any one reading it. Regardless of the nature and extent of one's previous education, the first step for anyone desiring to fit himself for specification writing is a thorough training in an architect's office as a draftsman. This training must be thorough, and be continued over sufficient years to give a wide range in types of buildings worked over, and to insure an ability to make a clean, clear working drawing, scale or full size detail, as well as the ability to read quickly, any drawing. Having satisfied himself that he has reached this point in his preparation, it will become necessary for the aspirant to begin superintending construction, either in conjunction with his drafting or by giving his entire time to it. The more superintendence experience the better fitted he becomes. At this time the faculty of observation should be cultivated, particularly for small things. It is also well to practice being a good listener rather than a talker, for much practical information can be acquired from a foreman on a job and also from the individual mechanics as well—they are all possible future foremen. Such information is usually given freely. Whatever the information, it must be weighed and analyzed carefully, the good retained, the bad rejected. In beginning superintendence work, the habit of thinking in general terms must be supplemented by that of thinking in detail without losing sight of the problem as a whole. A mental attitude that is skeptical and analytical must obtain. Conditions must not be accepted at their face value, but must be carefully analyzed and separated into their component parts and each part weighed separately. Things are not always what they seem. A material proposed for substitution for one specified must be examined, its characteristics studied and compared with those of the one specified, and its effect on other adjoining materials determined before a decision as to its use is given. Similarly a form of construction proposed for use in place of one specified, or detailed, must be carefully analyzed, its relation to all other work considered and its sufficiency determined before rendering a decision. During the years of superintending the constant need of referring to specifications will give a familiarity with them, an ability to discern their faults of arrangement, and of language, as well as other shortcomings. It will be excellent practice having the defects of a specification for a current piece of work well in mind, to rewrite it in accordance with one's ideas while superintending the work. At this time one should be in a position to write a specification, selecting a small building, preferably a country house, the drawings of which may be accessible. After writing the specification, it would be an excellent scheme to have it criticised by some competent person. From this point on it is a matter of practice and study. As one goes along it is necessary to have a filing system to collect the technical data and requirements of all trades necessary in writing specifications. This is matter gathered partly from one's own experience, partly from the experience of others obtained by personal contact, or from books and the technical journals. Good constructive matter is very often found in catalogues, but it must always be carefully weighed. It should be properly classified and filed to be readily accessible, because it is matter which is being constantly added to and changed.

At first one will write the specifications by hand, referring to paragraphs of other specifications obtainable, followed later by dictating to a stenog-

rapher, who will typewrite a draft for correction, and, later, as one becomes more proficient, will come the dictation of the specification to be typed in finished form.

In writing a specification it is important that the drawings be arranged to give one a comprehensive view of them all. They should be arranged in some order and in such manner that the eye may travel swiftly from one to another. Writing a specification with the drawings placed one on top of another, having to lift each in turn to get at the one under it, is not only wasteful of time, but is very apt to lead to duplications and omissions. The drawings should be either tacked to racks of wood properly arranged, or pinned to muslin shades which should be attached to spring shade-rollers.

The drawings having been arranged properly, it will be necessary next to study thoroughly the scheme before one. A specification can not be written intelligently until the theory of the proposed building is fully understood and assimilated. In the case of a simple building this may not require much time, but in larger and more complex buildings all the time that is necessary for the purpose should be given. The scheme having been assimilated thoroughly, the items of work in the various trades should be picked out in their order and noted on a pad, the trades kept separate and in order. As one picks out the items in each trade, many of them require either mention or work in other trades to tie in properly, so that some kind of pad or book indexed as to trades should be at hand in which to note such items under their proper trades. Also as one goes through the later trades, items will occur requiring mention in earlier trades, each of which must be noted in the indexed pad or book mentioned above, and each of which must be listed in the work to be done in each trade. At this point it may be mentioned that the arrangement of trades in a specification should be as far as possible, in the order in which the work is customarily installed in the building. Where a trade installs both exterior and interior work, they should be separated, the exterior work specified first, followed by the interior.

In taking off the drawings the items of work to be done in the various trades, the customs in vogue in the locality should be followed closely, and all items of work specified under the trade or trades which must install them. This is particularly important in large cities where the labor unions are strong and agreements between them and the employer's associations exist. Work specified under one trade and rightfully belonging to another, is very apt to be overlooked by the sub-contractor in estimating with a situation which is very unpleasant.

Having listed all items of work required in all trades, it will be necessary to prepare the general and technical requirements for each trade, which determine the quality and method of installation of the work. As explained before this is matter which is made up partly from one's own experience, partly from the experience of others and acquired in contact with them, and in many other ways. It is constantly changing and must be revised from time to time. Indeed, it varies with different types of structures.

With this arranged satisfactorily and with the list of items of work to be done, the dictation of the specification may be safely started. This should be done preferably in a room where one is free from interruption, as mental concentration is not only desirable but necessary for the best results. As to the typing, it is much better, until the work becomes familiar, to have a draft typed "triple spaced" by a stenographer, to be corrected and then written in final form. The triple spacing allows room for corrections without making it so difficult for the stenographer to copy.

From this point on it becomes a matter of practice. The habit of analyzing constructions and separating them into their component parts must be practiced continually. The specification writer should be able to demonstrate the practicability or reverse of any proposed construction. As he works he must actually, in his mind, erect the building. Any construction which he does not understand fully, he can not properly handle in the specification. It is imperative that he acquire an understanding of any construction before attempting to specify it. The specification writer should at the same time keep himself informed as to costs. He should watch the changes in the material market and labor as well. If asked, he should be able to name the more expensive of any two materials or forms of construction having the same result in view. He must study constantly along this line. He must keep abreast of the times by reading all manufacturers' literature reaching the office, and should file a great deal of it in such manner as to be readily accessible. He should be informed as to the manufactured devices in the market and know where they may be obtained. Also he should be particularly alive as to the new ones, their merits or defects.

He should acquire the art of estimating the probable cost of work by taking off quantities both of material and labor in all trades. As estimating requires a great deal of analysis, it will be very helpful in his specification work and will develop in him a certain quick judgment of costs. It would be well for him to purchase a practical book on estimating and study it diligently.

One more point only need be dwelt on, and that is a specification reminder. It would be an excellent thing early in his experience to start a reminder, i. e., a list of possible items entering into the construction of buildings of all classes. It should be arranged to separate the different types of buildings, i. e., country houses, city houses, non-fireproof and fireproof construction. Or, perhaps better, country houses, non-fireproof and fireproof construction. It should be gradually developed by the individual, and after lining out all specifications it should be read over to pick up any possible omissions. Printed reminders have been obtainable in the past, but as methods change, their usefulness becomes less and one built up by the individual is always preferable. Besides the research necessary in preparing such a reminder is very beneficial.—Pencil Points.

* * *

Can't Slam a Revolving Door

"If our forefathers could come back and see the revolving door they would conclude that they had been hitting the old rye a little too hard," says The Chicago Herald and Examiner, and adds:

"But if it could be pointed out to them what a necessity it is, they would wonder why they never thought of it in their time.

"The revolving door is one of the wonders of our age. The man who invented it should be given a prominent place in the Hall of Fame. It is beneficial in more than one way. Besides saving the occupant of a building from saying to everyone who enters, 'Please close the door,' it has taught us the art of self-defense.

"And have you noticed the unpopularity in the last few years of the once-famous merry-go-rounds? What has caused this? Nothing less than the revolving door! Why should a kid pay 5 cents to ride on a merry-go-round when he can have the same sport free at any office building?

"Yes, the revolving door is a marvel. It has only one drawback. A fellow can't slam it on his way out when he's angry."

Waterproof Roofs of Concrete

By ROBERT W. GARDNER, in Concrete

THE writer was interested in an article by John F. Schaefer, describing a method of obtaining a waterproof concrete slab laid over a previously finished roof. This goes to show that the problem of waterproofing concrete is not primarily in getting an impervious mixture, but one of correct design so that various stresses will not open up cracks in the slabs.

Good, honest concrete, well mixed, carefully placed and properly designed to take care of expansion stresses, makes a better roof than can be obtained with any other material.

The writer can point to a number of roofs that have been standing now over twelve years, and at last accounts were as good as new. These had no integral or other forms of waterproofing, but were merely reinforced concrete slabs with a floated surface, and like the slabs described by Mr. Schaefer, were not tied to the beams and walls that supported them, but rested upon them and were separated from them by a thickness of roofing felt. These slabs could therefore expand and contract without any resistance other than the reduced friction at their bearings.

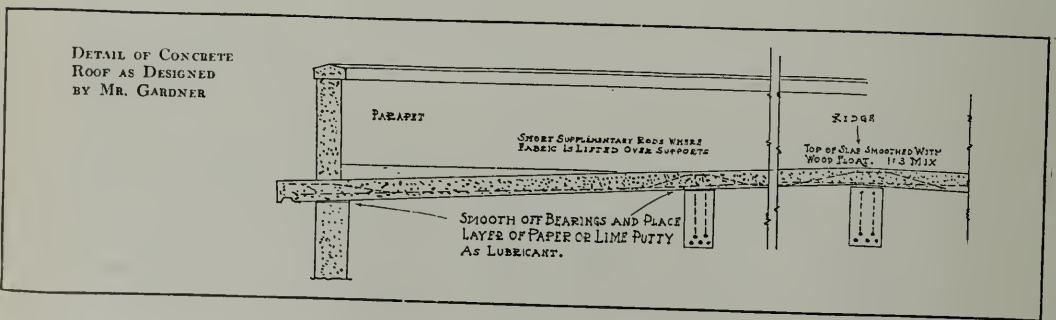
The roofs I refer to were designed by the writer and erected under his supervision by the Briarcliff Farms, Inc., in Pine Plains, N. Y., in the summer of 1908. One was over a boiler room about 20 x 40 ft. Others were over steam drying rooms of laundry, refrigerator rooms, sterilizing rooms and bottling rooms. The largest was about 40 x 54 ft.

The principle was the same in all of them, and all of the roofs were equally satisfactory. The stresses caused by friction can easily be learned by experiment, and provided for in the design, if the ordinary reinforcement of the slab is not sufficient, as it was in the above instance. The only extra expense was in deepening the roof beams to compensate for the neglect of the compression ordinarily figured in the T-shaped slab and beam combination, and the trouble of casting the beams and slab in two operations.

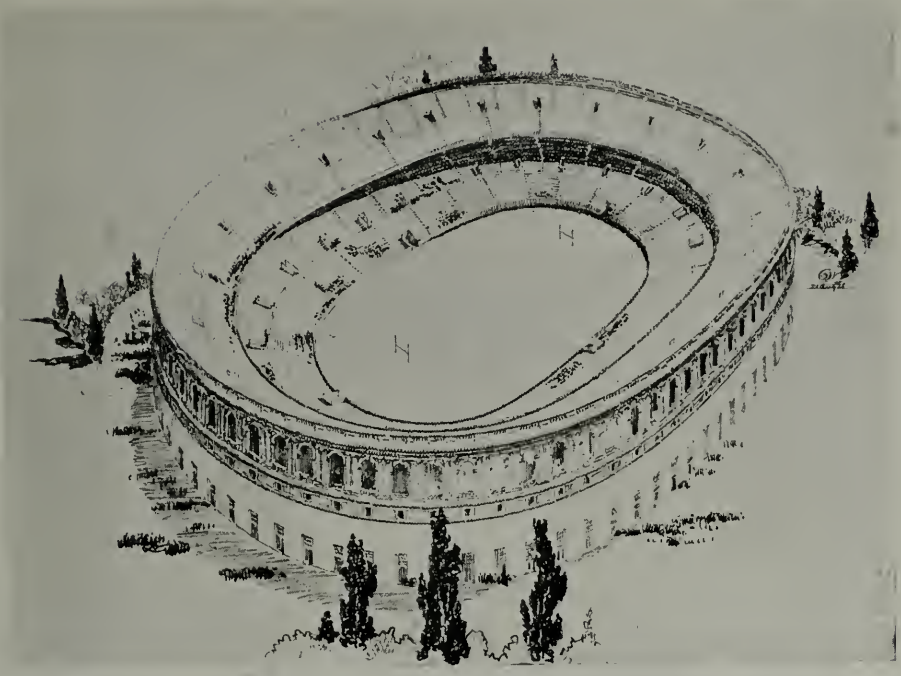
In view of the entire saving of the usual protective roofing the expense of these items is negligible.

The writer has described these roofs for several years to various classes, in lectures at New York University, and has carried out the idea in a number of roofs in New York City.

Let anyone with a drawing board turn it over and notice the method of screwing the board to the cleats with slotted screw holes, to allow for expansion and contraction, and he will see that the basic design for this roof is an old one.


PARAPET
SHORT SUPPLEMENTARY RODS WHERE FABRIC IS LIFTED OVER SUPPORTS
RIDGE
TOP OF SLAB SMOOTHED WITH WOOD FLOAT. 1:3 MIX
SMOOTH OFF BEARINGS AND PLACE LAYER OF PAPER OR LIME PUTTY AS LUBRICANT.

DETAIL OF CONCRETE ROOF AS DESIGNED BY MR. GARDNER



AIRPLANE VIEW OF STADIUM, UNIVERSITY OF CALIFORNIA, BERKELEY
John Galen Howard, Architect

University of California Stadium Designed Like a Theatre

WITH a double-deck arrangement for seats that will project its 60,000 spectators toward the playing field, much as spectators in a theater are projected towards the stage, California's Memorial Stadium, to be built at Berkeley adjoining the campus during 1921-1922, will offer something unique in stadium construction. The double-deck arrangement of seats was used successfully in building the stands at the Polo grounds in New York, but other university stadiums have been built on a different plan, notably those at Harvard and Yale. At Yale, for example, the spectators are on one seating plan, and the man who happens to draw a seat on the outskirts of the bleachers is removed a very great distance from the playing field.

In the California stadium, the greatest horizonal distance of any seat from the center of the field will be 360 feet, because of the double-deck seating scheme. The stadium will be of steel and reinforced concrete, elliptical in its plan, and completely surrounding the playing field. It will be given an architectural beauty that will distinguish it from all other stadiums by the inclusion of alcoves, balconies and winding stairways. It will measure 728 feet from north to south on the major axis, and 528 feet from east to west.

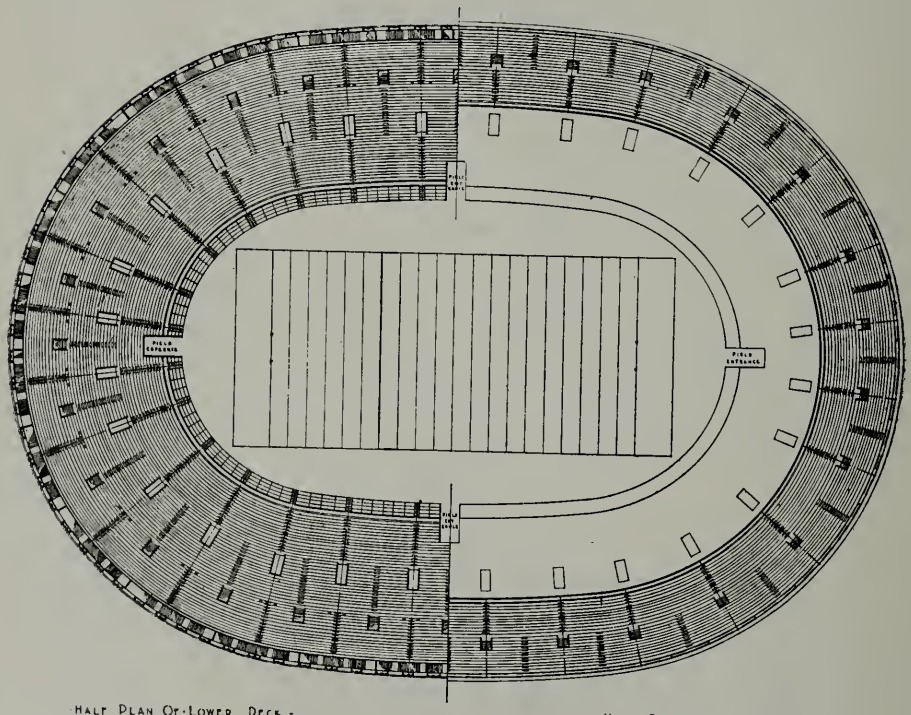
To eliminate confusion, each of the sections will have its own corridor and stairway, so that the distribution of spectators to their respective sections will be taken care of entirely outside of the building. Four great portals, on a level with the playing field, will serve as dramatic points of entrance for the opposing teams as they come on to the field. These portals

SECTION

SCALE OF FEET

STADIUM -- UNIVERSITY OF CALIFORNIA

JOHN · GALEN · HOWARD · · ARCHITECT ·



HALF PLAN OF LOWER DECK.

HALF PLAN OF UPPER DECK.

· PLAN ·

SCALE OF FEET

STADIUM -- UNIVERSITY OF CALIFORNIA

· JOHN · GALEN · HOWARD · · ARCHITECT

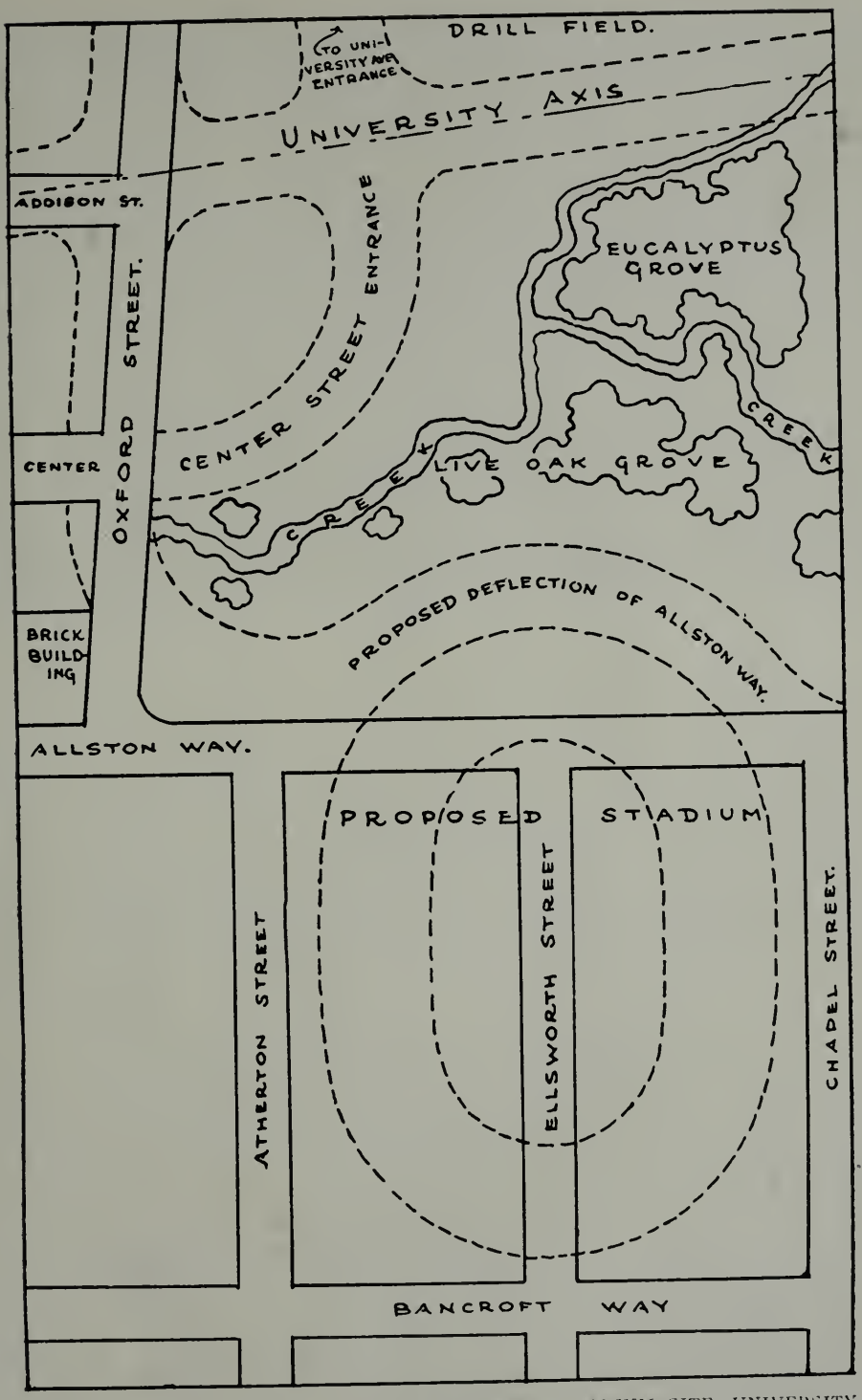
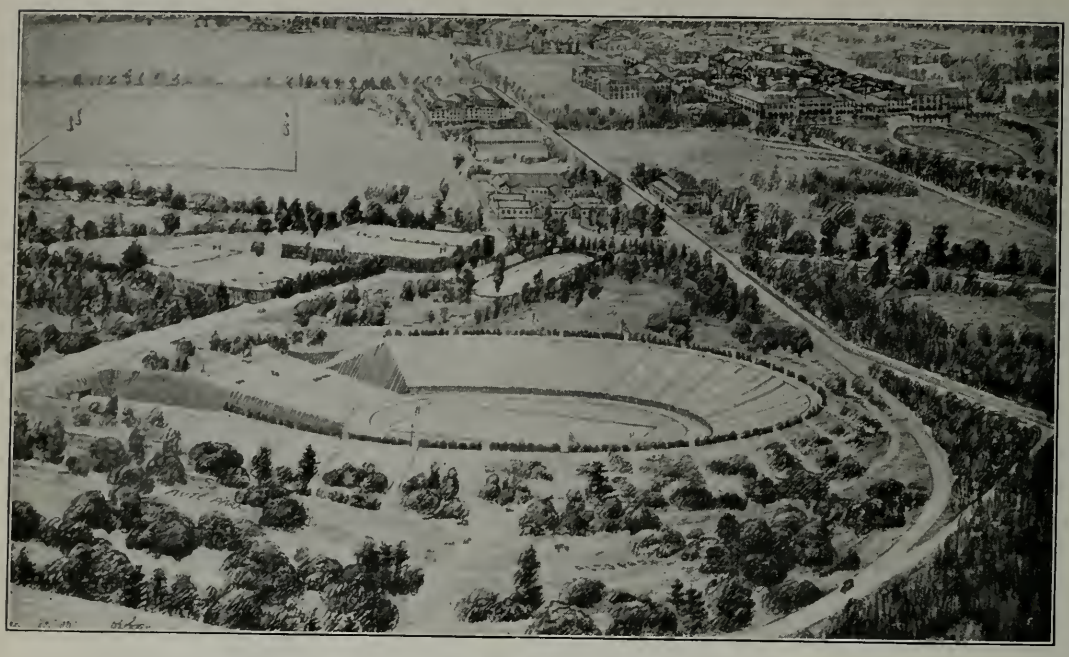


CHART SHOWING STADIUM SITE, UNIVERSITY OF CALIFORNIA, BERKELEY



THE STANFORD STADIUM

The floor of the field will be 23 feet below the surrounding land and the top of the embankment 36 feet above the present level. The field measures 562 feet by 355 feet and contains a quarter-mile track with a 220-yard straightaway through the open field. The cost will be $210,000; seating capacity 61,000.

connect, by a wide corridor, with training quarters, dressing rooms, and other necessary features. The stadium will be so designed that otherwise waste spaces under the decks may, as desired, be taken advantage of for handball, tennis, and other activities beneath the cover furnished by the decks themselves, as a by-product of their arrangement.

The acoustics of the stadium are being carefully studied, and the great structure, in addition to being used for baseball and football games, will be employed for pageants, fairs, and for civic, state and other meetings.

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The National Forest Reserves of California

THE National Forest Reserves of California contain resources that, conservatively estimated, are worth $300,000,000 to the people of the State.

These resources are not locked up. The timber, water, pasture, and recreational facilities are all for the use of the people, and the mineral riches are open to development just as they are on unreserved public lands. In the fiscal year ending June 30, 1920, 740,000 head of cattle, sheep, hogs, horses and goats were pastured on the Forest Reserve ranges.

These are high lights of an article prepared for the San Francisco Chamber of Commerce by Paul Redington, United States District Forester, with headquarters in San Francisco.

He states that Uncle Sam owns 19,000,000 acres of land embraced in seventeen National Forests that cover most of the mountain ranges of the State. This area—slightly less than one-fifth of the area of the State—

takes in all of the Sierras, most of the Coast Range from Monterey to Mexico, and the Coast Range and Siskiyous from Clear Lake to the Oregon line.

During the fiscal year ending June 30, 1920, there was cut from the national forests in California timber with a stumpage value of $391,102, and during the same period a total of 345 million feet of timber was sold to 1,005 different firms or individuals. In addition to the timber sold, 1,606 free permits were issued for the use of dead and down material during the same period. At the present time about 30 per cent of the total merchantable timber area has been covered by timber surveys, and the Forest Service is in a position to make sales with little delay in most of the accessible timber stands on the forests.

Permanent improvements, for use in protecting and administering the forests, are constantly being constructed. Up to date these improvements have cost approximately $2,000,000 and include 400 miles of roads, 4,500 miles of trails, nearly 5,000 miles of telephone lines and over 1,000 buildings used for dwellings, lookouts and barns, in addition to numerous other improvements of various kinds.

Through co-operation with the owners of timber lands on or near the national forests, a rigid enforcement of the fire laws, and the education of the general public in fire prevention, the number of man-caused fires has been materially reduced in the past few years, but there is still much chance for improvement. Average fire suppression costs over this eleven-year period are $92,000, while the damages average about $100,000 a year.

In summer fire detection and suppression is the most important work of every forest officer.

While most of the fires are discovered by the regular lookouts who are on duty on high mountain peaks all summer, the detection system has been greatly augmented the past three seasons by the flying patrols of the United States Army Air Service, which maintains a regular patrol over most of this mountain region.

Operating from bases at March Field, Visalia, Mather Field and Corning, these daily patrols cover many hundreds of miles of the national forests where the fire hazard is the greatest.

All land in the national forests has been classified, and the areas found to be chiefly valuable for agriculture either eliminated or opened to homestead entry. As a result of this classification, some 2,000,000 acres were eliminated and about 250,000 acres in small scattered tracts were opened to entry under the Forest Homestead Act.

For an annual rental of $10 to $25 any one can secure for a term of years a lease on a permanent campsite which may be improved to suit the taste of the permittee. Many clubs, lodges and church organizations secure permits of this character.

A new development along this line is the municipal camps operated by Oakland, Sacramento and Los Angeles for residents and taxpayers of these municipalities.

Sacramento now has a fine camp on the El Dorado Forest, and Oakland opened a camp last year on the Stanislaus Forest. Fresno and San Diego also have permits for camps of this character.

In addition to enjoying the use of all these forest resources, the people of California get 35 per cent of the gross forest receipts. For the fiscal year 1920 these receipts amounted to $730,000, of which 25 per cent went to the road and school fund of the counties in which the national forests are located and an additional 10 per cent is spent on road and trail construction in these forests.

HIDE AND LEATHER BUILDING, NEW YORK

Eighteen Stories of Concrete

IT has often been stated that reinforced concrete as a type of construction would never be suitable for buildings of great height. That height need not be a limiting factor has been demonstrated in the Hide and Leather building recently completed, writes Mr. Walter D. Binger in the Contractors' Atlas.

Hardly secondary in interest and importance is the fact that, in spite of the record-breaking height of the building, the work was carried on successfully through the winter months.

Perhaps the principal objection advanced against reinforced concrete for high buildings is that columns of the lower floors would need to be uneconomically large. This objection was overcome by the use of a rich mixture (1:1½:3) for columns, together with the use of specially high strength spiral hooping.

The use of brick and tile curtain walls has always been popular for reinforced concrete buildings—sometimes because of building code requirements which impose the same wall-thickness for concrete as for brick or tile. In this building advantage was taken of the rule that in New York City 8-in. concrete walls are allowed as equivalent of 12-in. brick—a considerable saving in a building of this size.

Flat slab design and the use of steel forms for columns and floor slabs, resulted in smooth, even concrete surfaces, thus contributing much to the light, sanitary, and clean-cut appearance of the interior of the building.

For a concrete building of such height and prominence it was realized that a distinctive and beautiful surface finish was a necessity. In order to preserve unity of treatment in the finish, it was decided to obtain the desired effect in the concrete itself by tooling a specially prepared facing mixture of the walls of the two lower stories.

The concrete of the structural part of walls, columns and floors was made with gray Atlas Portland cement and the regulation commercial aggregates. The facing mixture was composed of Atlas-White Portland cement and colored aggregate consisting of rose quartz and feldspar chips, mixed one part cement and two parts aggregate.

There has always existed a difficulty in placing conveniently and economically a facing mixture of concrete monolithically with the balance of the backing concrete. The commonly accepted method has been the use of facing boards—a troublesome, costly and sometimes only partially successful expedient.

In the placing of the facing mixture on this building, a much more convenient and practical method was employed. In place of a movable facing board, metal lath was wired to the outer reinforcing bars, leaving a space of 1½ to 2 inches between it and the outer forms. This space, usually filled with ordinary concrete as fireproofing, was used for the facing mixture.

By keeping the level of the facing concrete higher than the backing concrete, no difficulty was experienced in securing a continuous face showing none of the backing. Careful tamping of the facing mixture was accomplished by means of ½-inch bars with T-heads.

Any slight defects in the surface were pointed up after the forms were removed. The concrete was then allowed to cure all through the winter before the tooling was done. This consisted of bush hammering to expose the aggregate. The resulting surface is a strikingly exact reproduction of natural granite. The upper stories were surfaced by grinding with carborundum.

EXPANDED METAL LATH FASTENED TO REINFORCING STEEL READY FOR PLACING.

EXPANDED METAL LATH USED AS "FORM" FOR SPECIAL SURFACING CONCRETE.

Making Architecture Fit the Building

By G. E. MATHEWS, in Building Management

IN view of the fact that recently a number of office and other buildings have been designed in Gothic style, and that the adaptation of this style to certain of these buildings has produced a result which has received the highest commendation not only from the public but from architectural critics, the question often arises why this style is not more generally used for banking work, instead of the more familiar Classic design.

There is no question but that a beautiful and thoroughly satisfactory building can be produced in Gothic, providing it is designed by an architect who is particularly trained in that style and sufficiently familiar with the characteristic details to be used. This is of course true in either the Classic or Gothic styles, but it works peculiarly to the disadvantage of the Gothic because a very small percentage of the work now done is Gothic. Comparatively few architects use it for their buildings, and consequently few workmen become familiar with its detail.

This operates to both lessen the chance of a satisfactory result in design, and also to increase the cost of the building. At the same time, unless the architttect is able to incorporate some particularly striking effect which will at once mark the building as distinctive for the work for which it was designed, the general effect and the impression on the public will be that of a church, because Gothic design is now associated with religious or educational buildings while the Classic styles are associated with business and civic buildings.

In all successful buildings the use to which the building is to be put and its architecture should be in harmony. This is strikingly shown in the Woolworth Tower, where the Gothic spirit and detail have been admirably incorporated into a skyscraper. Modern banking practice, however, seems to require light and spacious business rooms which call for the use of Classic design with its large window openings and wide spaces rather than the pointed windows, heavy piers and vaulted ceilings which are associated with Gothic design.

As a consequence, should the bank architect attempt to use the Gothic style in the construction of his buildings, it would probably result not in a Gothic building at all, but in Gothic detail applied to a building constructed along Classic lines.

One must recognize that an architect who thinks in Gothic, having at his disposal plenty of money and time and skilled workmen (for all three would be necessary), could produce a most striking and successful bank building. Yet under modern conditions the Classic style seems to be the most satisfactory. As a matter of fact, that such a beautiful style as the Gothic is neglected proves either that we do not know how to use it or that it is not a style adapted to our times, except chiefly for the design of educational and religious edifices.

* * *

More Garages than Houses

A total of 81,103 one and two family houses were built in 196 cities of the United States in 1920, while in the same cities garages to the number of 93,121 were erected, according to a statement just issued by the Department of Labor. In the 196 cities, which contain 32.7 per cent of the country's population, $1,204,490,764 was expended in building operations, $40,522,240 of which was for construction of moving picture houses. The cost of building schools was $50,023,140, a little more than half the cost of garages, the department estimated.—Highway News Digest, Washington, D. C.

BUNGALOW OF MR. RALPH WYCKOFF, SALINAS
Ralph Wyckoff, Architect

Kinks in Hot Air Heating

THE most common practice in hot air heating is taking the air from out-of-doors by means of a duct leading from an open window directly to the furnace with as few abrupt turns as possible. It has been found that at times the wind may blow directly into the window from which it is taken and sometimes may drive more air into the furnace than it will heat. The dampers must be adjusted to stop some of it, and again the damper must be adjusted when the wind goes down, to allow enough air to enter.

Then the wind may blow by the window and suck the air out of the furnace so that snow on the ground nearby will melt. This requires a guard to turn some of the air into the duct. The guard may be built by placing a three sided box over the window with two ends open, but with the top, bottom and one side closed. A vertical damper is placed in this box pivoted at the top and bottom at the side away from the window. Stops should be provided so that the damper can only blow far enough to let the air into the duct from whichever direction it flows and shunt it into the duct to the furnace. Wire screens over the openings will keep out leaves and other foreign matter.

The controlling damper in the duct should be made so that it cannot be shut more than two-thirds and so constructed and hung that under any conditions a strong wind will close it to that extent. To facilitate the inflow of air when the atmosphere is still, it should be so constructed as to afford the least friction possible. It should be air-tight and is best made of galvanized sheet metal. Where it is connected with a window, the glass sash should become a part of it near the top so that the light from outside will still be available in the cellar. There is an advantage in having it run under the floor from the window to the furnace. Then the duct should be carefully built and smooth and should enter a circular pit under the furnace. In the past a pier has been built in the center of the pit, to support the weight of the furnace, but it is believed better practice to use an I-beam to carry the weight so that the air can rise to the hot surfaces and air passages of the furnace without deflection or influence.—Sheet Metal Worker.

Department of Safety

Conducted in the Interests of the Building Public and with the Co-operation of the California Industrial Accident Commission

Keeping Pace With Changing Conditions

By CARL H. FRY, Safety Engineer

DEVICES that were called safeguards a few years ago may not be so considered today. People today demand faster traveling facilities than were formerly attainable and as the speed increases more and more of the old guards are cast aside and others that are more effective must be substituted to meet the new conditions.

An interlocking device for elevator doors and controls that was at one time considered entirely satisfactory, is today in itself, quite as satisfactory but does not meet today's needs and an auxiliary device must be used with it.

A fatal accident was caused recently, not by the failure of the interlocking device, but by the lack of such auxiliary equipment.

The interlocking device prevented the operation of the car until the landing doors started to close, but it did not prevent the man—who in consequence lost his life—from getting part way through the door and becoming wedged there as the door closed. As the car descended he was caught by the top of the car and dragged past the floor on which he had been standing, before the car was stopped. Had this car been fitted with an auxiliary attachment, or a new device that would prevent the car from being operated until the landing doors were closed and locked, or were within three inches of complete closure and locked, the man would not have been killed.

The elevator car in question was making a down trip with several passengers aboard and stopped at an intermediate floor to take on more passengers. After two had stepped into the car the operator started to close the landing doors, and presumably, at the same time started his car again on his downward trip. It appears that at the same instant a man, apparently not noticed by the operator, tried to enter the car. Whether he thought the car was waiting for him, or thought he could get through before the doors closed, is immaterial. He was caught and badly mangled, dying a few hours later. Although the operator had considerable experience he did not think quick enough nor act quick enough to save the man's life. It has been said that a careful man is the best safety device, but why solely rely on the human element when it is possible to use a positive mechanical safety device?

The accidents that can not be prevented are so few in comparison with those that can and should be prevented that it is hardly worth while to mention them.

Ladder Brackets

By T. W. OSGOOD, Assistant Superintendent Department of Safety.

THE following pictures illustrate three types of ladder brackets in common use in Southern California. All of these brackets are adjustable to meet the need of holding scaffold planks on either side of the ladders and on either upper or lower members of brackets.

FIG. 1—CHICAGO AND LOS ANGELES LADDER BRACKETS

From a working point of view, no one of these brackets appears to have any appreciable advantage over the others, but from the view point of safety, this condition does not prevail. The upper bracket shown in Fig. 1 is commonly known as the "Chicago Ladder Bracket," which has been the subject of criticism, due to the fact that it has been a frequent offender in pulling out the upper rung to which it is attached, thereby dropping the scaffold plank and workmen, with injury to the latter.

This objection has been overcome in the case of the "Los Angeles

Ladder Bracket," shown at the base of the ladder in Fig. 1, by providing hooks to engage the ladder stringers.

In Fig. 2 is shown the "Dunlap Ladder Bracket," which it will be observed, engages and distributes the load over three of the ladder rungs.

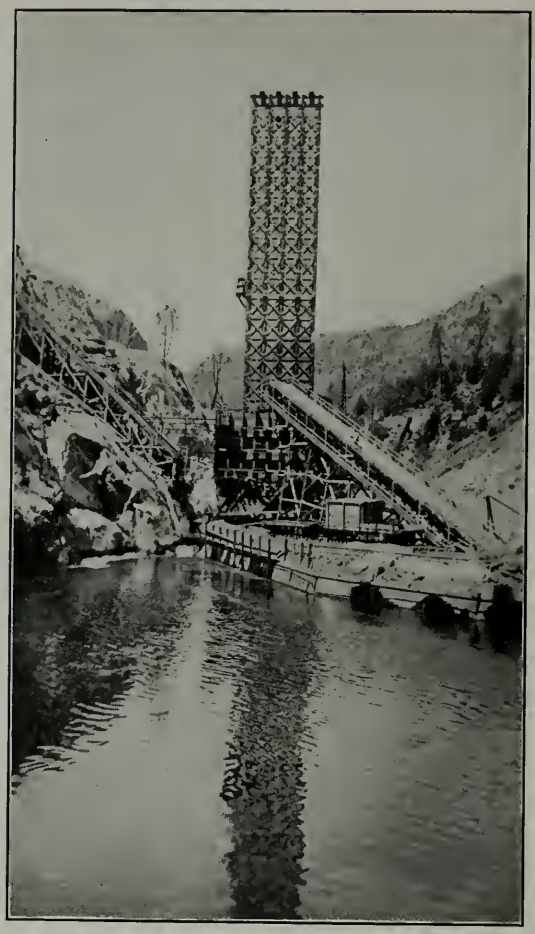
In passing upon the merits of the three brackets noted, performance indicates that the "Chicago" does not afford reasonable safety; that the "Los Angeles" affords reasonable safety and that the "Dunlap" affords safety in excess of the "Loe Angeles."

FIG. 2—DUNLAP LADDER BRACKETS

Seven-Story Fall Results in $40,000 Damage Award.

George E. Glover, a Chicago salesman, was awarded $40,000 damages for personal injuries by a jury, against Jacob L. Kestner and his wife, Mrs. Bessie Kestner, owners of a building.

Glover charged he stepped into an elevator shaft on the seventh floor when he opened a door which he believed led to a hallway. He fell to the basement and suffered such injuries that he cannot walk.—Chicago Tribune.



TOWER AT HETCH-HETCHY DAM PROJECT

Safe and Skillful Methods Used in Constructing the Hetch Hetchy Dam

By J. J. ROSEDALE, Construction Engineer

THE Hetch Hetchy dam under construction by the Utah Construction Company for the City and County of San Francisco, is progressing rapidly and every precaution is being taken by the contractors to safeguard the two hundred workmen engaged on this huge undertaking. Recently I made a reinspection of this project and was gratified to note the amount of progress made during the last year. The reason for having accomplished so much work with such good results during the short time was well expressed by Mr. Hank Lawler of the Utah Construction Company, who said: "The Industrial Accident Commission's safety orders are fully complied with on this work and we are always glad to have representatives of the Commission come around and call our attention to any dangerous conditions they may find."

The mixing plant which is to pour the 365,650 cubic yards of concrete for the dam consists of two mixers each of a capacity of 56 cubic feet, a bin for the storage of 13,000 barrels of cement, screw conveyors, and a tower 170 feet in height upon which 150 feet will be added some time in the future.

The tower is constructed of heavy douglas fir timber and secured at all the joints with ¾-inch bolts. This tower is fastened at each corner by 5¾-inch plow steel cable to prevent it from swaying or tipping. The structure is 6 feet 4½ inches by 26 feet 4 inches and has four compartments. Each compartment has a bucket of 36 cubic feet capacity. These buckets will be operated by four Mundy's 75-horsepower electric hoists, each equipped with Solenoid brakes.

The ingredients for the concrete will be conveyed mainly in screw conveyors. The cement will be handled in bulk carloads and will be carried to the bins in a 50-ton capacity aerial tramway.

The concrete will be poured by the Inslay gravity system and it is anticipated to place 1000 cubic yards of concrete per day.

The work is under the direct supervision of Mr. C. R. Rankin, construction engineer for the City and County of San Francisco; Mr. Hank Lawler, general superintendent, and Mr. A. E. Paddock, superintendent of construction for the Utah Company.

* * *

Enduring Qualities of Slate Roofing

Writing of the enduring qualities of slate, Oliver Bowles, mineral technologist of the Bureau of Mines, Department of the Interior, in a report of an investigation on "Slate as a Permanent Roofing Material," says:

"It is reported that in the Peach Bottom slate districts of Pennsylvania and Maryland the same slates were used on seven successive buildings during a period of over 100 years, and in England slates have commonly been moved from one structure to another. American history covers so brief a period that it can properly record only the initial stages of the life of a slate roof, and on this account multitudes of people have little conception of the actual period of useful service a slate roof is capable of rendering. Consequently one must go to the old world to obtain records of real value. In England and Wales, and in France, many buildings constructed in the 15th and 16th centuries were roofed with slate, and the roofs are still in excellent condition. There is a record of a chapel in Bedford-on-Avon in Wiltshire, England, roofed with slate in the 8th century, and after 1200 years of climatic exposure the roof is moss-covered but in good condition."

* * *

Masonic Home Competition

Mr. William Mooser, architect of San Francisco, has been declared winner of a competition held recently by the Masonic order of California. The problem was to provide a suitable plan for the future enlargement of the Masonic home at Decoto, near Niles, Alameda county. Eventually 1,000,000 will be expended on new buildings, but the immediate needs will be taken care of by the erection of four structures costing $250,000—a men's ward, women's ward, addition to the hospital, and extensions to the dining room and kitchen. Construction will be of brick and work will start within 60 days. Other competitors were Messrs. P. Righetti, J. W. Dolliver, B. J. Joseph, and Carl Werner, all San Francisco architects. The jury was composed of Architects G. A. Applegarth and August Nordin and three members of the Masonic order. Mr. Slyvan Schnaittacher acted as architectural adviser.

Judge Landis' Awards Compared with Wages in 45 Cities

The September issue of the Bulletin of the Illinois Society of Architects contains a tabulation of the average wages paid to different classes of labor in the building trade in 45 American cities on June 30, 1921. Following is a comparison of these wages with the awards of Judge Landis in the Chicago arbitration:

Trade—	Cents per hour Average wage	Cents per hour Landis award.	Landis award as percentage of average for 45 cities.
Carpenters	82.77	*100.00	121
Cement finishers	87.07	85.00	98
Electricians	93.80	110.00	117
Hodcarriers	61.55	72.50	118
Laborers	42.61	42.50-72.50	100 to 170
Lathers	93.00	100.00	107
Painters	84.02	*95.00	113
Plasterers	105.90	*110.00	105
Plasterers' tenders	64.24	78.75	123
Bricklayers	109.06	110.00	101
Elevator constructors	99.11	*95.00	96
Gas fitters	96.02	95.00	99
Hoisting engineers	92.80	110.00-85.00	118 to 92
Marble cutters	97.59	102.50	105
Marble setters	100.50	87.50	83
Masons	106.69	110.00	103
Ornamental iron	94.57	95.00	100
Pipe covers	96.69	95.00	98
Plumbers	101.54	95.00	94
Roofers	80.62	99.50-100.00	123 to 124
Sheet metal	88.34	*95.00	108
Steamfitters	101.20	95.00	94
Steamfitters' helpers	61.28	70.00	114
Stonecutters	100.78	102.50	102
Structural iron	97.50	105.00	108
Tile setters	98.88	112.50	114
Avg. of basic wage	89.93		

*Suggested as fair wage.

It is to be noted that Judge Landis' decision states that several of the lowest rates awarded in the skilled trades were the result of the refusal of the respective unions to sign working agreements permitting what the Judge considered to be a fair days output and all reasonable economy of construction. These unions have been given an opportunity to secure advances in wages through the signing of revised agreements prior to Nov. 1, 1921.

Effect Shown by Table.—A half dozen illustrations of the effect of the Landis decision may be summarized in the rates per hour and per day of 8 hours as follows:

	Wages per hour		Wages per day.	
	Old.	Landis.	Old.	Landis.
Plumbers	$1.25	$0.95	$10	$7.60
Bricklayers	1.25	1.10	10	8.80
Boilermakers	1.25	1.00	10	8.00
Steamfitters	1.25	.95	10	7.60
Cement finishers	1.25	.85	10	6.80
Cement workers	1.00	.725	8	5.80

For the trades the wage is reduced from an average of $9.40 a day to an average of $7.43, or about 21 per cent.

The United States Steel Corporation, whose employees the unions were unsuccessful in organizing, paid $5.06 per day of ten hours on Feb. 1, 1920. In March, 1921, this wage for common labor was reduced to $4.05, and in July last to $3.70, and last month to $3. This was accomplished not only in straight wage cuts but also in eliminating time and a half for overtime work. For this same work in February, 1916, the steel company paid $2 per day.

The United States Steel Corporation has cut its common labor a trifle over 40 per cent. Labor on road construction work throughout the country has been lowered about 45 per cent. Judge Alschuler reduced wages of workers in the packing houses approximately 19 per cent. The Wisconsin Industrial Commission reports that the average weekly earnings of those employed in 211 establishments have decreased 23 per cent and below the peak of high compensation.

* * *

Wood Floors Not a Fire Menace if Properly Protected

IN connection with the recent observance of Fire Prevention Week, the National Fire Protection Association, in its annual report, points out the important work that is being performed by the engineering department of the National Lumber Manufacturers' Association in devising fire-resistive construction that, according to insurance statistics, reduces the fire losses in properly built frame houses 50 per cent. These engineers have been active during the past year in scientific experimental work leading to the perfection of timber construction as used in frame buildings and in the interiors of ordinary construction. Co-operative tests performed by them and the Associated Metal Lath Manufacturers at the Underwriters' Laboratories, Chicago, have succeeded in establishing a type of protection for joisted floors which should convince fire underwriters and designers that it is possible to use wood floors, properly protected, in places where they have originally been discredited. These tests will be continued on other interior parts of structures where wood may be used, with the object of thoroughly establishing a protective time rating for joisted and studded construction as now used. It is expected that the outcome will be the development of an entirely new type of construction.

The tests on timber posts or columns which have been in progress for some time have been completed and a report will be issued to the public at an early date. These tests have shown conclusively that many of the failures during fire in buildings of the mill construction type have been due to the connections between the members rather than to the failure of the wood itself. A new type of post cap which develops the true life of the wood when exposed to fire has been devised.

These series of tests have done much to correct the erroneous opinions in regard to the behavior of wood when exposed to fire and have created a lively interest in the possibilities of well designed timber construction among fire underwriters.

Inclusion in building codes in the various cities of the country furnish the only medium whereby the institution of developed standards can be assured and through its technical department the National Lumber Manufacturers' Association has made every effort to secure the inclusion of proper laws relating to fire prevention and fire protection in the building codes of the cities throughout the country. During the past year field representatives have visited over 300 cities for the purpose of forcibly bringing before the city councils, the chambers of commerce, and the various architectural and engineering bodies the importance and need of the institution of proper building laws. In conducting this work it has been the purpose in the first place to secure the proper use of wood from a structural standpoint and then to urge the incorporation of the necessary fire prevention features in building codes for the protecting of wood products. The officials of a large percentage of the cities visited have expressed themselves as being convinced of the need for safeguarding lives and property through the medium of proper building regulations.

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DEL MONTE - PEBBLE BEACH NUMBER.

Tourists who stop over at Monterey seem never to tire of their praises of that section of California—climate, scenery and architecture combined. Of the latter the Architect and Engineer will have most to say in the November number, for some really noteworthy things have been done there in home building.

Especially at Pebble Beach we find that our architects have accomplished things that merit more than local recognition. The entire issue for November will illustrate many of the larger and not a few of the smaller homes that have been built on the Monterey Peninsula in recent years and these pictures will be accompanied by plans and descriptive matter of exceptional interest and value.

BANKS SHOULD ASSIST PROSPECTIVE BUILDERS NOW

"I have a dozen clients ready to build now—clients who realize that wages and building material prices have dropped very considerably, but the financial interests are not lending proper co-operation. They are keeping up high rates of interest and are loaning on a very narrow margin. As long as the banks maintain this attitude there is little hope of a building revival that will relieve the present shortage of homes and help reduce high rents."

The above sums up present building conditions in San Francisco, and is quoted from a conversation with a leading architect, who has prospects of $1,500,000 of new work in his office. This architect's troubles are not exceptional. Many others report similar experiences.

This condition would seem to demand some concerted action on the part of the big merchants who, after all, are affected quite as much as the building interests.

The average merchant is apt to think that an increase in building construction will bring profit only to the building interests. Such is not a fact, and that is the reason merchants should be organized to help the building movement.

When rents go up, the tenant pays his increased rent by reducing his other expenses. That is why merchants and others have lost out, and explains to a large degree the famous "Buyers' Strike," when people were obliged to stop buying to make both ends meet.

It is said that out of every dollar of the average man's 1913 income 20 per cent went for rent, while in 1921 40 per cent of his income is being paid out for rent. The comparison of the two shows that the increased rent is paid at the expense of almost every other business, trade or profession. Furthermore, the families of thousands of men in the building business have diminished purchasing power since work has been slack.

It is time to start agitation for lower money rates, limitation of taxation on new homes, and other measures which will facilitate construction, and bring our housing facilities to somewhere near normal.

"FIRE-PROOF" HOMES A FALLACY

There is no such thing as a "fireproof" home within the reach of the ordinary pocketbook, and if there were such a thing it would be difficult to build an attractive home along such lines. The best policy is to build scientifically and the frame house that is built right is fire-resistive for all ordinary risks, and certainly carries no special hazards for the occupants, inasmuch as frame construction as now perfected is fully 50 per cent less liable to combustion than similar homes built ten or fifteen years ago.

When the properly built modern frame house does catch fire it is almost impossible for the conflagration to spread rapidly because of the "fire stops" placed throughout the building and because the materials which might ordinarily communicate fire to wood are properly insulated. These fire stops not only keep fire from spreading rapidly, but they reduce by 50 per cent the danger of fires starting within the building itself. Such construction adds very little to the original cost of the building and gives all reasonable immunity against fire destruction.

Notes and Comments

Business Cannot Wait for Bottom Prices.

More favorable building conditions probably will exist ten or twelve years hence. This is but one way of saying that we have entered a period of declining prices and the tendency will continue downward for a long period. The decline will be gradual and will not justify builders in holding off from one year to another in the hope of benefiting by the lower price level. The Donley Brothers Company (Cleveland), in a recent issue of their leaflet, "Donley Devices," make some very pertinent comment on this subject:

"Anyone who has decided to wait until building costs reach the actual and extreme bottom had better provide himself with a chair in the shade and some light reading matter. He will have a long wait and very little to do in the meantime.

"According to Col. Leonad P. Ayers, who was chief statistician to the war board and is now a Cleveland banker, we have entered an era of gradually falling prices that may last for ten years or more.

"He points out the odd and interesting facts that American history can be divided into eras of rising prices and falling prices.

"After the war of 1812, prices generally fell until about 1843. Then they rose for more than twenty years, culminating in the civil war peak. After that, there was a gradual drop to the middle nineties. Then prices lifted again, reaching their top in the summer of 1920.

"Business can't wait for bottom prices, with a prospect of a 10 to 30-year decline. If it does, there will be mighty little business left."

Working Under the "American Plan."

The "open shop," so-called, has been given the name of "The American Plan." This more clearly defines it, for it aims to give to every worker in the country the same opportunity to earn his living. It is opposed, and rightly so, by five to ten per cent of our working millions dictating the conditions under which all shall work, or saying that none but the five or ten per cent shall be allowed to work at all.

When President Gompers of the American Federation of Labor recently classed advocates of this "American- Plan"- as- "enemies- of labor," he did not show that skill in leadership that often has marked his long tenure of office, nor was he consistent with his own asserted belief in American democracy.

The American Federation of Labor does not yet embrace 5,000,000 workers. Should this membership presume to dictate the conditions, rates of wages, etc., under which all American workers shall labor? Should it set itself up as an industrial autocracy in democratic America? Should it be allowed to determine who may and who may not be permitted to earn a living in the United States? For this is exactly what Mr. Gompers must mean, if he means anything, in attacking the "open shop."

Until the spirit of real democracy is dead in this country, no minority, organized or otherwise, is going to determine on any question what the majority shall or shall not do, says a writer in Valve World. The "American Plan" will win and will be the prevailing plan simply because it is American, because it is fair, equal and wholly in consonance with our Constitution.

Architects and Matrimony.

Up in Seattle a woman reporter has been interviewing local bachelors on the question of matrimony, and she has dared interrogate two Seattle architects as to the kind of woman each would seek today if matrimonially inclined. Here are their answers as quoted in the Monthly Bulletin of the Washington State Chapter, A. I. A., of which both are active members:

J. S. COTE—"What kind of a wife would I select? Don't quote me. (laughter and more laughter). I couldn't tell you over the phone. I've waited too long. I'm a professional man, interested in fine arts, and I think that women, the responsible kind, to the intellectual man, are a great help and inspiration. I've traveled around a bit, and in Paris, that subject came up frequently in discussions with great artists and writers. In history, we find the greatest characters received much of their inspiration from the intellectual women, who were their wives. Now, mind you, I am not saying what kind of a wife I would like. When your article goes to press, I am going to leave town."

FRERE CHAMPNEY—"There's embarrassment in numbers, as the French say, and it's hard to get down to singling out a type. Polygamy would be all right if not a state offense. I'd like a composite girl. She would be excellent, but I'm a poor judge. You might say for me, though, the financial situation being so strenuous at this time, makes it hard to reach any kind of a decision."

Building or Breadlines?

From Municipal and County Engineering.

A certain amount of amiable optimism makes life pleasant at times, but it does not, of itself, sustain life. Just now a little wholesome and frank pessimism is in order. Two hard facts are staring us in the face: the unemployed now number fully 6,000,000 men and winter is coming on.

It is all very commendable and very agreeable, up to a certain point (and also very easy) to rely on a favorable turn which will ease the hard circumstances of creature existence, but times come when it is well to realize that few good things just happen or are vouchsafed to humanity by a beneficent providence. The thoughtful are in agreement, now, that work must be found for the idle or we are in for a winter of deprivation and suffering.

Fortunately, by taking thought and acting promptly, work can be provided for those now idle and the many others who may be released from industry with the coming on of the cold season. Public works offer the way out.

As everybody knows, many construction projects have been postponed from year to year for just seven years. Much public improvement work, long held up, should now move rapidly forward. A very great deal of this work can be done during the winter season. * * *

This is not only a way out of a bad situation but in the opinion of many it is the only way out. The choice rests between action or inaction, between building or breadlines, between public works or public charity. Only a flabby and unjustifiable optimism will prevent public officials making the proper choice. Now is the time for some robust and rational realism; if we don't take control of the situation the coming winter will be one of suffering for the millions of unemployed and their dependents, the women and children, the aged and the infirm.

While it is unpleasant to direct thought to what will surely happen if we go on waiting for providential, or congressional, relief, it is pleasant indeed to point out that if public works projects be driven forward, now, useful work will be provided for those released from industry and great sums of money will be placed in general circulation, to the immediate and substantial benefit of all lines of business.

A Convention L'Envoi

When the last Convention is ended
  And delegates scattered wide,
When the last report is submitted
  And Committeemen have died,
We shall rest, God knows we shall need it,
  Sit down in our office awhile,
And make some new resolutions
  Of somewhat different style.

Then only the fools will make motions.
  For the meeting will always have sense,
But Dan will still vote down all notions
  That dare to involve expense.
And no one will offer amendments
  Or even a substitute,
And our genial, lovable President
  Will manage the Institute.

And every one will be merry
  And nobody ever compete,
And even the Secretary
  Will learn to stay in his seat.
For each for the joy of living
  Will everything else neglect,
But he'll throw out his chest and tell the world
He once was an ARCHITECT.

—William Stanley Parker.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

P. G. & E. Buildings

The engineering department of the Pacific Gas & Electric Company is busy on plans for a number of power stations to be built in various California cities. Mr. I. C. Frickstad is the architectural assistant in charge of the designing of these buildings. The list of new substations includes one at Newark ,Alameda county, one at Lake Kamescal, Claremont, one at 50th avenue, Melrose, and one at Vacaville. This department has lately completed plans and construction is under way for a club house near the Pitt River project, Fall River Mills, California. The Pacific Gas & Electric Company will also erect an eight-story office building at 17th and Clay streets, Oakland, from plans by Architect C. W. Dickey ,and a reinforced concrete warehouse at 2nd and Washington streets, Oakland, from plans by Architect William Knowles.

Personal

Mr. H. Rafael Lake has recently opened an office in the Balboa building, San Francisco. Mr. Lake formerly attended the University of California and is a graduate of the Massachusetts Institute of Technology. He received his training in the office of Mr. Cass Gilbert, architect, New York.

Architect William H. Weeks has moved his office from 75 Post street to 369 Pine street, San Francisco.

Architect A. F. Rosenheim has moved his offices from the Van Nuys building to suit 402 Pacific Mutual building, at Sixth street and Grand avenue, Los Angeles.

Successful Competition

A second "wide-open" architectural competition has ended most brilliantly. The benefactor of the wise program is Kansas City, Mo. Mr. H. Van Buren Magonigle, of New York, a Fellow of the American Institute of Architects, winner of the competition, has been chosen to design and supervise the construction of the War Memorial for that city.

Designing Parochial School

Architect J. J. Donovan of Oakland is preparing plans for a $75,000 parochial school for St. Claire Parish at Santa Clara. Rev. Hugh P. Gallagher, pastor.

Mr. Lansburgh Busy

Architect G. A. Lansburgh, Gunst building, San Francisco, has been commissioned to prepare plans for a new Orpheum Theatre building at Oakland. A class "A" structure seating 2300 persons and costing $500,000 will be built on Broadway, near 19th street. Mr. Lansburgh is also designing a new moving picture theatre for Watsonville, and plans have been revised and bids taken for a Class "A" motion picture theatre on Mission street, near Brazil, San Francisco. Mr. Lansburgh has made plans for a store and office building at Bush and Montgomery streets which will be built by MacDonald & Kahn. The upper portion of the structure will be occupied by Mr. Lansburgh for his offices.

Competition for Library Plans

A competition will be held to select an architect for the Los Angeles public library building and branch libraries to be erected under the $2,500,000 bond issue recently voted. The library board has asked the City Council for authority to appoint an architect direct. This request was denied and an architectural competition was recommended by the Council. The library board will have charge of the competition. The manner in which it will be conducted has not been determined, but the board will probably take up the matter very soon.

Mr. Devlin Awards Contracts

Architect Leo J. Devlin has recently awarded three contracts for buildings in San Francisco, Vallejo and Santa Rosa at prices considerably lower than the bids taken for the same work several months ago. The Knights of Columbus building at Vallejo was let for approximately $90,000. Three months ago the lowest bid received for the construction of this biulding on precisely the same set of plans was $110,000, showing a saving of about 20 per cent.

Vallejo Hotel Building

Plans have been completed by Architect B. J. Joseph and a contract has been let to the Clinton Construction Company for a $50,000 three-story Class "C" hotel at Vallejo, for Isadore Meyer.

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Architects Granted Certificates

At a meeting of the State Board of Architecture (Northern Division) held on September 20th, the following were granted certificates to practice architecture in California:

Miss Dorothy Wormser, 55 5th Ave., San Francisco.

Mr. Herman Carl Baumann, 251 Kearny street, San Francisco.

Mr. Edward A. Eames, 1539 Webster street, San Francisco.

Mr. Ross W. Edminson, 2123 California street, San Francisco.

Mr. Raymond R. Shaw, Fresno, Cal.

Mr. Ralph E. Wastell, 1360 Broadway, Oakland.

Architect Baumann Busy

New work in the office of Architect H. C. Baumann, 251 Kearny street, San Francisco, includes a residence flat building on 16th avenue for Mr. R. W. Callaghan; alterations of a residence into a store and flats at 30th avenue and Clement street for Mr. Walter L. Hall; four houses in San Mateo Park for the C. H. Bessett Building Company; a $10,000 residence in St. Francis Wood for the Martin A. Roth Company, and several houses in Mission Terrace for the Mission Terrace Company.

Will Design Long Beach Schools

Architects Allison & Allison, Hibernian building, Los Angeles, associated with Architect H. Alfred Anderson, Long Beach, have been commissioned to prepare plans for the new Junior High School building at Long Beach, and also a twelve-room unit to the Carrol Park school in the same city.

Architects W. Horace Austin of Long Beach and John C. Austin of Los Angeles will also prepare plans for several new school buildings in Long Beach.

Work in A. H. Knoll's Office

New work in the office of Architect A. H. Knoll, Hearst building, San Francisco, is as follows: store building, Mission street, north of 19th, $17,500; alterations to Hotel May, Market street, near Marshall Square, $7500; alterations to store in the Commercial block, California and Drumm streets, $7200; residence on 16th avenue for Albert Helfech, $15,000.

Community Apartment House

Architect W. L. Schmolle, 40 Montgomery street, San Francisco, has prepared preliminary plans for an eight-story community apartment house for Mr. H. M. Wood and associates, to be built on the northwest corner of Jackson and Franklin streets, San Francisco, at a cost of $150,000.

Students Scale Old Masterpieces of Architecture

A recent news dispatch from Rome says:—Students at the American Academy in Rome are required to make close studies of the masterpieces of architecture, painting and sculpture in Rome. The other day some of them were seen crawling over the Pantheon, scaling the dizzy heights of the rotunda in an effort to study the forms and structure of the old Roman landmark which has stood for 2000 years. They take their tapes and other measuring instruments and get the dimensions of these buildings and their decorations right off the work itself.

Two American neo-architects, students of the academy, attracted an enormous crowd of Romans recently by their scaling of the Trajan column. They measured every detail of the historic piece from top to bottom, copying the decoration with zealous application.

The students scale the roofs of churches, ramble over the imposing facades and nose into every nook which they think might add a little more to their knowledge of the art of the ages. Some of them have made exact reproductions in coloring and size of some of the greatest masterpieces in mural painting, mosaics and friezes.

"We find this a most efficacious method in aiding the men to get the first-hand knowledge of the various masterpieces," said Assistant Director G. P. Fairbanks.

Passing of Mr. K. G. Malmgren

Mr. K. G. Malmgren, Spokane architect who died recently, went into Eastern Washington when the city, known as Spokane Falls, was in its earliest development. He began as a draftsman in the firm of Cutter and Poetz, one of the pioneers of architecture in the territory. On Mr. Poetz's retirement, Mr. Malmgren entered the firm and the majority of early constructions in Spokane were designed by Cutter and Malmgren. A few years ago the firm dissolved and Mr. Malmgren practiced alone until he subsequently took C. I. Carpenter into partnership. The death of Mr. Malmgren in his fifty-eighth year is a distinct loss to his city and state and to the architectural profession on the Pacific Coast.

Addition to Physician's Building

Architects Meyer & Johnson, Bankers' Investment building, San Francisco, have completed plans for a one-story class A addition to the Physician's building, San Francisco, to cost $60,000.

Santa Maria High School

Plans have been completed by Architects Allison & Allison of Los Angeles for a $400,000 high school group of buildings at Santa Maria, Santa Barbara County.

A $35,000,000 Residence Tract

Mr. E. G. Lewis, founder of the Atascadero colony in San Luis Obispo county, will develop the Palos Verdes ranch of 26 sq. miles extending from Los Angeles harbor to Redondo, according to an announcement by Mr. Lewis. This ranch was purchased eight years ago by a syndicate headed by Mr. Frank Vanderlip of the National City Bank of New York. Mr. Lewis proposes to convert the tract into one of the finest residential subdivisions in the country. The total cost of the project is estimated at $35,000,000, including 100 miles of wide concrete boulevard, water and sewer systems, electric lighting and $500,000 of ornamental planting. Prof. H. T. Corey will have charge of the engineering and leading architects and engineers of Los Angeles will be consulted.

Work in Mr. Weeks' Office

New work in the office of Architect W. H. Weeks, who has moved his offices from 75 Post street to 369 Pine street, San Francisco, includes a two-story brick apartment house for Mr. Slyvan Godchaux, proprietor of the Estudillo House at San Leandro; a one-story concrete gymnasium at Tracy for the West Side Union High School District; a group of reinforced concrete school buildings for the Crescent City High School District at Crescent City, Del Norte county; a one-story reinforced concrete high school building at Independence, Inyo county, and a one-story Mission style reinforced concrete school building at Soquel, near Santa Cruz, for the Soquel Union Grammar School District.

Bret Harte Hotel

Northern California is soon to have another summer hotel added to its list of summer homes for tourists and vacationists, according to Mr. A. P. T. Elder, capitalist of Washington, D. C., who is constructing a new hotel to be known as the Bret Harte, in the mountainous mining country made famous by the pen of the California poet near Placerville. Mr. George C. Sellon is the architect.

Architect McCrea Busy

New work in the office of Architect George E. McCrea of Capitola includes a reinforced concrete church at Watsonville for the First Presbyterians; a $6000 residence at Watsonville for Mr. F. E. Kilburn, and a $6000 home in the same city for Mr. H. A. Hyde.

Factory Building

Messrs. Righetti & Hirschfeld, 12 Geary street, San Francisco, have completed plans for a reinforced concrete factory to be built in South San Francisco, for the Fontana Food Products Company, at an estimated cost of $100,000.

Fresno Civic Center Plan

A civic center plan prepared by Mr. Charles H. Cheney was adopted by the city trustees of Fresno and the supervisors of Fresno county, jointly, in 1918. Since that time no further move had been made to carry out the plan until last month when the Rotary Club of Fresno decided to inaugurate a campaign to secure construction of two wings to the present court house as the first units of the scheme.

In Reed & Corlett's Office

Plans are being prepared in the office of Architects Reed & Corlett, Oakland, for a one-story frame and stucco store building to be erected at Grand avenue and Webster street, Oakland, for Mr. H. A. Mitchell, manager of the Oakland Short Line, and for a two-story reinforced concrete store and loft building at Broadway and Grand avenue, Oakland, for Mr. George H. Roos.

Concrete Stadiums

Besides the big earth stadium being built at Stanford University, Palo Alto, construction will soon start on a reinforced concrete stadium at the University of California, designed by Architect John G. Howard, and a frame and concrete stadium at Exposition Park, Los Angeles, designed by Architects Parkinson & Parkinson, of the latter city.

Largest Sun Dial

It just seems to be becoming generally known that San Francisco has one of the largest sun dials on the Pacific coast. A few years ago this dial was erected in Granite Gnomon at Ingleside Terraces. It rises to the height of twenty-six feet and is surrounded by a dial 157 feet around, with the Roman numerals designating the hours of the day.

Oil Refinery

Plans are being completed by Architect Carl Werner, Humboldt Bank building, San Francisco, for an oil refinery, pipe line, etc., in the Key Route Basin, for the American Petroleum Company. Hannah Bros. will be in charge of construction.

$300,000 Fresno Building

Architect E. Mathewson, Cory building, Fresno, is preparing plans for a six-story reinforced concrete store and office building, 100x150, with pressed brick front, to be erected in Fresno for the Brix Estate, at an estimated cost of $300,000.

Architect Garren Married

Announcement is made of the marriage of Miss Florence Jacobson and Mr. William I. Garren, of the firm of Morrow & Garren, architects, with offices in the Chronicle building, San Francisco.

Apartment Houses

Plans have been completed by Architect E. E. Young, 251 Kearny street, San Francisco, for a three-story frame apartment house to be built by himself at Octavia and California streets, San Francisco, and also for a four-story brick apartment house for Mr. Ralph Brown, to be built on Leavenworth street, near Sutter. The two buildings will represent an investment of $75,000.

San Jose Hospital

Plans are being completed by Architects Binder & Curtiss of San Jose for a four-story reinforced concrete hospital to be erected on East Santa Clara street, near 14th, San Jose, for a number of prominent physicians of that city. The first unit will have seventy-five beds. The promoters have incorporated and about $150,000 has been subscribed.

Two Large Warehouses

Plans are being prepared in Los Angeles for two large warehouses, one a six-story Class "A" structure for the Pasadena Transfer & Storage Company, John C. Austin, architect, and the other an eight-story reinforced concrete warehouse for the Wilshire Storage Company, E. T. Flaherty, I. W. Hellman building, Los Angeles, architect.

$500,000 Hospital Contract Let

Mr. M. C. Vaughn, Everson building, Oakland, has been awarded a contract to construct three reinforced concrete ward buildings and connecting corridors at the new Alameda County Hospital, 14th avenue and Vallecito Place, Oakland, from plans by Architect Henry H. Meyers, Kohl building, San Francisco.

Durant Motors Plant

Plans are being completed by Engineer H. J. Brunnier, Sharon building, San Francisco, who recently returned from an enjoyable trip abroad, for the new plant of the Durant Motors Company, to be built near San Leandro. The P. J. Walker Company will be in charge of construction.

Concrete Bank Building

Plans are being prepared by Architect E. C. Hemmings, Ochsner building, Sacramento, for a $40,000 reinforced concrete and terra cotta bank building for the El Dorado County Bank at Placerville, El Dorado county.

Building San Mateo Bungalow

Mr. Alfred Swinerton, manager of the Lindgren Company, is building a $14,,000 bungalow in the Spanish type of architecture at San Mateo from plans by Architects Weeks & Day, Phelan building, San Francisco.

Program of Competition for Redwood City High School

The following program or letter of suggestions has been sent to a number of San Francisco architects by the trustees of the Sequoia Union High School District, which has voted bonds for a $230,000 high school building:

It is suggested that the architect competing for selection in connection with this work submit for the board's consideration floor plans and at least one main elevation of a building such as would in his opinion be appropriate for their requirements.

Also, as an index to the accuracy and completeness of working drawings such as are ordinarily submitted to a building contractor from which to erect a building, it is required that each competitor shall submit to the board, at the time of the submission of suggestive sketches, a full set of working drawings in detail of a building he has actually planned and constructed, the plans to be exact copies of those that were used in connection with the erection of said building by the building contractor. The plans to be of a building similar in cost to the one we propose erecting. Plans of a high school preferred, but, if the architect has no set of school plans, he may submit plans of any similar structure that will truly indicate the completeness and accuracy of his working drawings.

In the final selection of an architect the trustees will take into consideration of the architect's standing, working organization, experience, honesty and ability to direct and carry through the work of construction.

In addition to the sketch plans asked for, an elevation and plan of an ornamental arch or gateway, about 60 ft. wide, is also to be considered as a part of this program.

The enclosed schedule of rooms and sizes of rooms and the arrangement is suggestive only. The architect is requested to look over the grounds that he may become more familiar with the building site. He may consult the trustees or principals at any time upon points not made clear in this preliminary outline.

Plans and all other data in connection with this proposition must be submitted on or before the first day of November, 1921.

SEQUOIA UNION HIGH SCHOOL

Preliminary Suggestions

Material:
Reinforced concrete.

Building:
Part two-story and part one-story building.
Unit plan.
First unit to accommodate 600 pupils, planned so that a unit may be added bringing the capacity to 800 pupils.
Mechanical Arts department will be placed in a structure located on the Brewster street side of the grounds and therefore is not mentioned in the following suggestions.
The gymnasium is to be a structure separate from the main building and connected to it by a corridor.

Academic Department—English:
4 rooms, 22½x30, 35 desks.
1 small office room.

Mathematics:
2 rooms, 22½x30, 35 desks.

History:
3 rooms, 22½x30, 35 desks.

Language:
2 rooms, 22½x30, 35 desks.
1 room, 20x24, 24 desks.

Science department:
Biology laboratory, 24x50, 32 pupils.
(Room for laboratory tables and recitation seats.)
General science laboratory, 24x50, 32 pupils.
(Room for laboratory tables and recitation seats.)

(Continued on page 126)

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

To Assist the Young Engineer

RECENTLY the Los Angeles Chapter of the American Association of Engineers named an advisory committee to help prospective students about to enter technical schools to determine the particular branch of engineering to which they may be best adapted. This committee is composed of twenty-eight members, divided into nine divisions of the engineering profession as follows: Electrical engineering, 5; highway and contracting engineering, 4; municipal engineering, 6; chemical engineering and testing, 1; mechanical and petroleum engineering, 3; hydraulic and irrigation engineering, 3; architects, 3; railroad engineering, 2; mining engineering, 1.

Technical schools were advised of the appointment of this committee and asked that they direct any prospective student who desired information regarding engineering to the office of the association, where they would be given a letter to the proper division of the committee.

Considerable publicity was given to the move by the press of Los Angeles and as a result many prospective students have been directed into the branch of engineering to which they seemed best adapted. In addition to those receiving advice direct from the committee many have written to the office of the association for information along various lines—some having been from those desiring to become stationary and locomotive engineers. Architecture has come for a liberal share, as well as all branches of the profession. One of the most striking letters that has yet been received is from a young Jap who came to this country to learn American architecture. The letter is interesting not only because of the fact that assistance is desired, but because he desires to learn American architecture that he may return to his native land and build "California houses." The letter follows:

Sept. 19, 1921.

Dear Sir:

I am a Japanese architect came over with the purpose to learn the system of excellent American architectural business.

But unfortunately I have no acquaintance among the American architects, so that I take the liberty of writing you, please excuse me.

I graduated the arch. dept. of the Tokyo Technical College in Japan in the 1915, then obeyed as chief designer of the American-ya (an American Contractor Co.) in Tokyo, Japan.

With above purpose if I could get a consent of an American architect who agrees my attending office, I shall work without any rewards. I possess great confidence in drawings and have an eye for pictures.

I beg you will use your influence with some architect to inquire in my behalf.

Yours very respectfully,
(Signed) K. KURKI.

To Willis F. Peffer,
Secy. Am. Association Engineers.

Engineers to Study Building

With the object of studying the planning of buildings from the standpoint of utility the Western Society of Engineers has appointed a committee on building, composed of architects and foundation, structural, mechanical and electrical engineers as well as those in the society who are interested in the operation and maintenance of buildings. The study will include dwellings, apartments and office and industrial buildings and the committee will go into the subject with a view to suggesting better planning and structures more nearly adapted to the use for which they may be erected. Building codes of the larger cities will be studied also with a view to suggesting desirable modifications and improvement.

Merced Irrigation District

Mr. Henry Hawgood of Los Angeles, consulting engineer, has been selected by the State Bond Commission to check the plans for the Merced Irrigation Districts project, prepared by Mr. J. D. Galloway, chief engineer of the district. Appointment of Mr. Hawgood is agreeable to the directors of the district and to the chief engineer. He will go over the entire project very thoroughly. Mr. Hawgood was engineer in charge of the location and construction of the Salt Lake railroad.

Visiting Engineers Dined

The San Francisco section of the American Institute of Mineral and Metallurgical Engineers held an informal dinner and smoker in honor of Mr. H. Foster Bain, director of the United States bureau of mines, October 4th, in the Engineers' Club, 57 Post street, San Francisco.

Accompanying Mr. Bain upon his western tour of inspection was Mr. Marion C. Rhodes, chairman of the House committee on mines and mining, who was also a special guest at the dinner.

$400,000 Steel Bridge

Plans for the proposed toll bridge to be built across the Columbia river between Pasco and Kennewick by the Inter-County Bridge Co. of Walla Walla, have been completed and bids are being called for.

The plans were prepared in the office of the Union Bridge Co., Central building, Seattle, Mr. Charles G. Huber, president, under the supervision of Mr. M. M. Caldwell, chief engineer of the company.

The plans call for a steel and frame structure 3236 feet long. There will be two steel spans, each 252 feet long; a cantilever span consisting of two anchor arms each 232 feet long, and two cantilever arms each 126 feet long. There will also be a suspended span 180 feet long. The steel spans will total a length of 1410 feet. The remainder of the structure, being approaches, will be of timber construction.

The bridge will have a 20-foot roadway designed to carry two 20-ton trucks or their equivalent, and is estimated to cost $400,000.

Oakland Architects and Builders Entertained

Oakland architects and builders were guests of the Electric Club at a luncheon in the Ivory ballroom of Hotel Oakland recently. There were about 150 present at the luncheon, including fifty guests. Mr. Clark Baker of the Great Western Power Company, spoke on the plans of his company for electric projects both in Oakland and in other parts of the state.

Mr. Garnett Young of San Francisco spoke on two topics, "Electrifying the Modern Home" and "The Servantless Home Through the Use of Electric Power."

Mr. R. W. Murphy, Pacific coast manager of a large lamp company, reported that according to figures he had made up, the state of California used 13,000,000 electric light globes during the last year. Mr. William Knowles, an Oakland architect, spoke on behalf of the architect guests and Mr. Edwin C. Graff spoke for the builders.

Engineers' Problems

"Problems Confronting Professional Engineers" was the subject of five-minute talks given by members of the American Association of Engineers at a reception and dinner in honor of Mr. C. E. Drayer of Chicago, national secretary of the organization, at the Palace hotel, San Francisco, Saturday evening, October 1st.

Engineer is Stricken

Mr. Howard C. Holmes, of San Francisco, and one of the best known civil engineers in the Pacific northwest, suffered a slight stroke of paralysis a few days ago on his return from a business trip.

Talk on Highway Tests

Explanations of the construction and descriptions of the tests which are being conducted in the reinforced concrete highway at Pittsburg, California, were given by Mr. Lloyd Aldrich, engineer in charge, and Mr. Jno. B. Leonard, his associate, at a luncheon of the San Francisco Engineers' Club on September 7. Motion pictures were used to illustrate the address.

The test highway has been constructed under the direction of the Columbia Steel Company in the interest of the "good roads" campaign. It has been built in the shape of a race track and is 1371 feet long. It is to be tested until destroyed by motor truck traffic. The road has been built entirely on adobe and thirteen types of highway are included in the big loop. The types are the result of conferences between leading federal, state and county highway engineers. Four tunnels have been constructed under various sections to observe the results of the heavy traffic on the under surface.

Appointment of F. H. Joyner

Mr. F. H. Joyner, formerly road commissioner for Los Angeles County, has been employed by the California Highway Commission as Assistant Highway Engineer in charge of general inspection for the southern district. Mr. Joyner's territory will include all of Southern California and the territory east of the Sierra Nevada Mountains, including Mono and Inyo Counties.

Sanitary Engineers

The latest state to adopt the term "Sanitary Engineer" for plumber is Colorado, writes Mr. R. Vessey in Valve World. "We now have Indiana, Tennessee, Minnesota and Colorado. At the latest convention of California Master Plumbers it was suggested to change the name to Domestic Sanitary Engineers, but this did not carry which is very unfortunate. Still, all things require time."

Volume of Highway Work Now Under Construction

Expenditures in connection with State highway construction work are now exceeding $300,000 per week. The recent sale of highway bonds has permitted the inauguration of a construction program involving a rate of expenditure in excess of that during any previous period of highway construction.

Engineer Wants Position

Civil engineer with valuable varied experience and a little capital, desires to affiliate with engineering firm of first class reputation, on salary or interest basis. Address P. O. box 68, Sacramento.

The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

Truck Loads and the Design of Highways in California*

By CHRIS. F. JENSEN, County Surveyor, Fresno County.

AN expenditure, in round numbers, of approximately $125,000,000, has been made by the State of California, and various counties of the state, for highway construction. Whether these highways have been designed with due regard to relative permanency, ease of repair and maintenance, and to the increasing volume of heavy duty transportation, is not necessarily material to this discussion. The important fact is that the work has been done; and the financial investment made in the execution of that work is of such magnitude that it cannot be disregarded. It must be protected.

Another fact which the various County communities must bear in mind is that until our state laws are changed, we face a statutory limitation on bond issues. Many of the counties of the state have already practically exhausted the five per cent bonding capacity allowed by law, so that, even if we felt inclined to rebuild present highways, we could not legally do so except by the long, tedious and unsatisfactory process of direct taxation.

We often listen to the argument that, as railroads are continually increasing the weight of their roadbeds to keep pace with increasing transportation demands, so state and counties should increase the strength of their highways to permit of the prevailing tendency of truck operators to increase loads. This argument, however, emanates mostly from truck owners, and particularly from commercial truck operators.

With whom should the determination of load carrying capacity of our highways be left for decision? Should it be the small proportion of commercial truck interests, or should it not rather be the province of the greater tax-paying majority, speaking through their duly elected representatives?

We find from statistics that only about ten per cent of the half million motor registrations in California, are for trucks; and of this ten per cent it would be safe to assume that at least half are used for private and limited purposes. It it not conceivable that the farmer or other non-commercial owner of a small truck, would knowingly advocate a course or construction involving disproportionate expenditure, or advocate an excessive loading of trucks when such procedure would result in heavy maintenance and repair costs to be charged back, in part, to himself.

As for the commercial truck interests, representing perhaps 25,000 out of 500,000 motor vehicle registrations, and their plea that highways should be built heavier in similar manner to railroad practice, we are not unmindful of the fact that the beneficial use of such trucks is tangible value to the general community public as well as to the owner or operator. The operator is interested directly in the immediate financial returns for service rendered; the general public is interested more or less indirectly from the fact that such service is available for the distribution of produce, for affording rapid transportation of farm products to commercial centers, and to act as feeders to our railroads, at a reasonable cost. We recognize that such trucks have become an integral part of our commercial life, and as much of a necessity as the telephone. However, the number of trucks need not be limited, and it is self evident that conditions may arise which would render advisable the limiting of roads and increasing the number of trucks necessary to haul a given tonnage. Such procedure should not in any sense be taken as a remonstrance against the commercial truck, as such. The relief sought is to so regulate the operation of trucks as to protect present highway investments, and to make such adjustment as will permit the construction of a maximum mileage of new highways, consistent with reasonable stability and funds available. The numercial increase of trucks of light tonnage will not endanger highways nearly so much as the increase of tonnage on fewer trucks.

In this connection let us not overlook the following facts: (1) that railroads do

(Continued on page 120)

*Extracts of an address delivered at the Good Roads Meeting of the Fresno Chapter, A. A. E.

Electrical Department

Co-operation of Architect and Builder with Electrical Industry

A Talk by GARNETT YOUNG Before the Oakland Electrical League

IT is well known to all members of the electrical industry that the demand for electrical devices and appliances of varied domestic types and usefulness is continually increasing in spite of all the unfavorable influences; moreover, the increase is the greatest in the case of those appliances comprising the labor-saving group. This tendency is a natural result of an economic condition prevalent in the West and involving the scarcity of domestic help. What is there in the wide world more desired by the average human being than to escape the hardships of physical labor? The well-to-do and wealthy have long been accustomed to accomplish this by the hiring of servants. In the present shortage of help, this relief is largely shut off so that the obvious alternative is to utilize what labor-saving equipment may be obtainable, and here we have the basic explanation of phenomenal impetus given of late years to the demand for washing machines, ironing machines, dish-washers and vacuum cleaners. The increasing publicity has brought these labor-savers to the attention of the humbler families and now many a housewife who never aspired to the luxury of a servant saves both her strength and her patience by utilizing electricity's latest reliefs to household drudgery.

No longer can we associate electricity in the home merely with lights, or with the now altogether common articles of convenience, as flat irons, toasters, percolaters, heaters, etc., for the field has broadened again and dire necessity, not mere convenience, is now served by these modern inventions, which, indeed, constitute a boon to the human race. The world was a long, long while in bridging the span from the flickering wax candle to the carbon filament, but once there and with electricity in the saddle, we have rapidly progressed. Now the people want and demand in their homes not only satisfactory illumination, artistically provided, but all other available comforts and labor-savers in the daily routine of domestic grind—heating, ventilating, cooking, dish-washing, house-cleaning, laundrying, etc. We are not picturing a dream of the future but a reality of today. If any of you are skeptical listen to these percentage figures representing the sales increases within this State by a few electrical jobbers who turned in reports for the benefit of our survey:

Item—	Average increase 1919-20 over 1918
Vacuum cleaners	180.7%
Curling irons	107.0%
Immersion heaters	67.3%
Air heaters	109.9%
Radiant stoves	87.2%
Disc stoves	93.0%
Percolators	114.7%
Toasters	134.1%
3-lb. irons	51.7%
5-lb. irons	49.7%
Disc stores over 600-watt	59.4%
Ranges	16.2%
Water heaters over 600-watt	77.4%
Vibrators	67.5%
Hair dryers	88.2%
Washing machines	351.8%
Ironers	222.8%
Sewing machines	47.2%

I ask you, gentlemen, if this showing does not prove conclusively that the public needs, wants and is willing to pay for electricity's aids. But the sad part of the story is that in thousands of cases these appliances have been introduced into homes not wired properly to accommodate them, so they did not, after all, prove the expected comfort or convenience and the inevitable result followed, namely, that the appliances were set aside and went out of use. This is not an idle statement but based upon a comprehensive survey conducted by the Society for Electric Development, which revealed that 60% of the appliances were discarded where homes were not properly wired, while, to the contrary, only 3% of the appliances were idle where "Convenience Outlets" were available. What a shame! What a black mark against our industry! All these thousands of idle appliances would be in service affording convenience and comfort to housekeepers if only, in the first place, homes had been wired with adequate "Convenience Outlets". The householder had either to abandon the appliances or to face the alternative expense of alterations and additional wir-

ing, which would seem prohibitive and which we must admit is all out of proportion to what the cost would have been had these simple requirements been provided when the premises were built. If you don't think this supplementary wiring costs money, try it. I have personally spent over $100 for some additional outlets in my home, the original cost of which would not have exceeded $25. You can imagine how willing I would have been to go to this expense had I been a tenant paying rent—there is a point where human nature revolts at imposition. Why, then, are we now entitled to inquire, is not the home properly wired in the first place to avoid all such complications? We are coming to that:

Practically all living abodes, houses flats or apartments, are designed not by the ultimate owner or tenant, but by an architect or building contractor, so these professions become a link in the chain of our troubles. But no sooner do we start out to investigate why the architect and builder slight the electrical requirements of the home than we uncover some bona fide alibis to any charge that would lay the entire blame at their door. The electrical industry itself must assume the chief responsibility and we may as well make a clean breast of it.

The first invasion of the home by electricity, and this was the only domestic development for many years, was in the field of illumination and to this day electric light means a lamp and socket just as it did in the beginning. Later came switches as a more convenient means of current control and the architect and builder adopted them. The switch, however, did not replace but only supplemented the socket and here you have in combination the two articles associated together in the public mind as the whole answer to the employment of electricity—the socket for connection and the switch for control. But in recent years came the introduction of the electric flat-iron, which was but a forerunner of a great variety of heating and cooking devices and, notwithstanding the increased wattage involved, the manufacturers designed and exploited these articles as "lamp socket devices", and they were so termed by the jobber, dealer and lighting companies in passing them along to the ultimate consumer so, again, the public had confirmation of its original conviction with the natural result that weighty articles like flatirons, toasters and percolators dangled from cords which tugged and pulled at their moorings, i. e. —the helpless socket pinioned to the unsteady chandelier or wall bracket.

Who then is responsible for the popular dependence upon the socket for double duty—first to accommodate the lamp and, then by removing the latter, to accommodate a utilization device? Who then is to blame if the housewife, with supreme trust in her faithful and versatile socket, expects it to also serve her for motor driven appliances such as vacuum cleaners, washing machines, ironing machines, etc? Is it not customary for an industry to do its own pioneering along educational lines? Why then blame the architect and builder who are primarily engaged in the designing and construction of homes, if they do not take the initiative in rectifying a blunder of the electrical industry? The most we can reasonably ask or expect is that, at this late date, they join hands with electrical manufacturers, the underwriters, the inspectors and electrical contractors in a conscientious endeavor to wise up the public that sockets, connected as they generally are to light fixture cord or wire, are best suited for lamps only and certainly must be limited to low wattage devices, while modern flush receptacles of enclosed contact type, fed by No. 14 code wire or larger, are necessary and safer for the heavier current consuming articles and appliances. The flush wall receptacle, otherwise known as the "Convenience Outlet", is the answer—for at one and the same time it kills off the nuisance of removing lamps from sockets, the unsightliness of the suspended cord, or fixture arms and the danger from overload while providing the connection right where it is most serviceable. When one little device will do all these things, do you wonder we have christened it "Convenience Outlet"?

After absorbing this bit of education then the public will be better prepared to understand the necessity for special wiring and connections to feed and control the operation of an electric range and, with a general appreciation of all these points, it is inevitable that living quarters will be electrically wired in the proper style when the premises are under construction. It is all a matter of education.

Surely, we cannot assume that the architect and builder will oppose this program. Never! The architect, artist though he is, will not scorn to give heed to the essential necessities and practical conveniences to which his clients are entitled and for which they are willing to pay. The builder, who constructs houses on a commercial scale, has, aside from consideration for his clients, the additional incentive of self-interest. He wants and must have salability above everything else and he will quickly learn that houses with incomplete electrical installations and unattractive fixtures will neither sell nor lease so easily as houses that are properly equipped. Why do these builders supply a garage with every house?—salability.

If I have succeeded in establishing our premises, that is to say, a need for cooperation between the electrical industry and its allies, the architects and builders, then perhaps it is time to state specifically the things we want of the architect and

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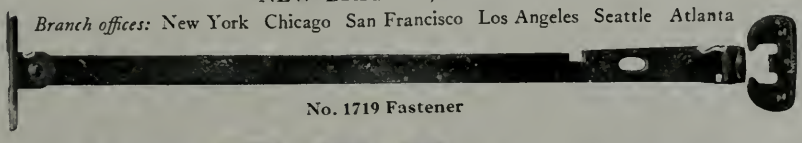

No. 1719 Fastener

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builder as their part in the proposed program. These things are not many—three will cover our wants. First, all we want is a complete wiring installation in each new house, flat or apartment, which will provide not only for sufficient illumination in artistic fashion but, by means of numerous "Convenience Outlets" and ample laundry space, pave the way for electrical home service—the householder being the beneficiary of this foresight.

Secondly, we ask that the "Convenience Outlet" be clearly indicated on blue prints or plans and that you insist they be installed as specified; if any electrical contractor comes along with the suggestion that you, or your client, can save money by eliminating some of these outlets, we hope you will throw him off the job—we would like to throw such a contractor out of the industry, for he is no credit to it. He is not concerned with the consumers' interests but only with outfiguring his competitors and landing the job.

Third and lastly, we want the specification by the architect and actual use by the contractor in these wiring installations, standard materials of known quality, thus insuring to the consumer maximum reliability of service and reflected credit upon the electrical industry.

Let us review these three wants in order to impress them upon you: Complete wiring installation providing for liberal lighting and electrical home service; quality materials only; permit no interference from electrical contractor, or others, who would cut down the installation or substitute inferior goods.

Gentlemen, I submit these are worthy objectives and we are not unreasonable in requesting you to help us attain them. At least, such a program has the merit of being founded on the constructive principle of "better service to the public," and we won't forget the public comprises the very people who are first the clients of you architects and builders and immediately thereafter the patrons of this industry. Since we have a common interest, it must follow that we have a joint responsibility. The California Housing Commission, some time ago, gave out figures to the effect that 130,000 additional homes are required and must be built in this State; most of these homes you know will be servantless. Electricity is the only possible solution to the domestic labor problem and we owe it to the public to see that our foresight provides them this means of relief normally and economically. Remember our joint responsibility.

Now, Mr. Architect and Mr. Builder, having thus made out our case to you, it is now your turn and privilege to ask what the electrical industry proposes to do on its own account in promoting this constructive program. Allow me to point out that the industry has already been doing a lot, at least for three years past, and is going to do more, for the industry has repented the folly of its early false propaganda, already acknowledged, and is setting about in numerous ways to reach and enlighten the public.

You know of the "Electrical Homes" of which five were put on in this State at a total publicity cost of $15,950. These "Homes" were inspected by 136,100 visitors and the demonstrators in charge were at great pains to explain to all comers that an electrical home was possible only by means of complete wiring and numerous "Convenience Outlets". One of these five "Homes" was displayed here in Oakland to some 30,000 visitors and there is now, in the course of construction in your city, another "Electrical Home," this one of the bungalow type and with more modest appointments.

Films were taken of the Los Angeles "Adobe Home" which was the most pretentious of the five demonstrations and the same have been going the rounds of the moving picture theaters of the State for some months past and, up to August 24th, had shown to an attendance of 101,800. Future bookings for this picture run into October and will cover the smaller towns in Northern California.

The "Convenience Outlet" story has been portrayed by lantern slides, which have been showing in Northern California towns, this booking providing for ultimate attendance of 217,500.

Eight serial stories on electricity in the home were run in consecutive weeks in the newspapers of all the towns of the State, excluding the bigger cities, hence this publicity was carried to an immense number of people.

We are now preparing large electrically illuminated billboards for the bigger cities in the State and these will confront the people day and night with illustrations of housekeepers operating labor-saving appliances connected to "Convenience Outlets."

Arrangements are being completed for special show-window displays among all the electrical dealers throughout the State and the whole of the holiday period advertising will be tied up to the "Convenience Outlet."

Our Co-operative Campaign, through its building equipment experts, is continually following up architects and builders, giving out facts and suggestions and distributing home-wiring plans, of which perhaps 50,000 copies have been circulated in our State, to say nothing of illustrated pamphlets and other forms of publicity.

All this work is to be kept going and you can well understand that these activities cost money, lots of it, but we are cheerfully putting it up and, not only that, but a tremendous amount of time and effort are devoted by those intimately supporting the movement. We are working through all of the industry's organizations, representative of its different

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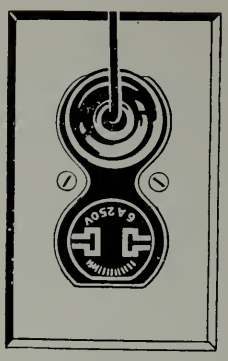
branches, and, as you know from the appeal we have just made, we want to work as well through our allies, the architects and builders.

One valuable activity I failed to mention is the national publicity on the part of electrical manufacturers who are including in their copy for popular magazines some reference to the "Convenience Outlet." This publicity reaches not thousands but millions of people.

You see, I have again referred to the "Convenience Outlet"; perhaps I had better say that this term, or phrase, has been adopted by the industry as the most descriptive name for the flush receptacle, hence the most practicable for use in our educational work before the public. The flush receptacle has been generally referred to by the industry, as well as by architects and builders as a base plug. That is wrong and misleading, for in modern wiring "Convenience Outlets" will not always be installed in the base-board but, more often than not, at a convenient heighth from the floor, depending upon the service intended. We don't set our switches down near the floor—why so the receptacle?

And while talking about the "Convenience Outlets", I have some good news for you, this being one of the big things which the electrical industry is doing in this movement. This particular move must be credited to the manufacturers, the leading ones of which have at last gotten together on a standard receptacle, which is to be adopted and promoted as the official "Convenience Outlet" of the entire industry. This means the scrapping by manufacturers of thousands of dollars of investment in machinery, patents, etc., but what matters that if the public is served? Gentlemen, here it is at last, the T slot "Convenience Outlet", with concealed contacts, made by all of the manufacturers and designed so that it will accommodate plug-in-caps with all kinds of blades.

Please note it matters not what device or appliance the consumer may buy, on one end of the cord will be found a cap with blades that will plug into these T slots. So, you see, by this standardization we have attained inter-changeability, simplicity and economy. (The industry was slow in coming to this but now that we have arrived, will ask you to help us make up for lost time.) This T slot "Convenience Outlet" is made in both the single and duplex type, the latter providing two connections under a single plate. This is another economy and a double convenience in that two devices may be operated off one outlet and this you know to be frequently desirable. Just think of such combinations as the reading lamp and an electric heater for the living room, an electric sewing machine and a heater for the sewing room, a toaster and a percolator for the breakfast table, a vibrator



and air heater for the bathroom, a flat-iron and a washing machine for the laundry.

Finally, gentlemen, I will say that the "Convenience Outlet" is the neck of the bottle in the domestic application of electricity; it is the indispensable pivotal feature of electrical home service; why, because it is not only the physical connecting link between the electricity for which the consumer pays and the service he thereby expects to get, but it is absolutely the sole guarantee of convenience. Am I not justified, therefore, in once more appealing to you architects and builders to get behind this standardized "Convenience Outlet", specify and install it liberally, several in the living room and at least one in all the other rooms, the bathroom and laundry, for your clients will surely get their money's worth. You are absolved from blame for past sins of omission, but you cannot escape your share of responsibility in the future. We don't ask or expect you to work for us but we invite and urge you to work with us in the interest of your clients—our patrons. Remember the joint responsibility and let us work together to the end that Californians, now the largest producers of electricity, shall consistently be the greatest consumers and thereby insure to their home life that convenience, comfort and happiness to which they are entitled by virtue of their abundant prosperity.

Opens San Francisco Office

Announcement is made by the Standard Metals Manufacturing Company, manufacturers of the Schroeder direct-flush valve for toilets, that a San Francisco office, taking care of all their Northern California business, has been established at 216 Hobart building, and within a short time branches will be opened in Portland and Seattle. The almost phenominal demand for Schroeder valves has induced the company to provide better sales facilities throughout the Pacific Coast and it is the intention of the manufacturers to make is possible for the plumbing trade in this territory to obtain Schroeder valves on short notice.

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The Contractor

Truck Loads and The Design of Highways in California

(Concluded from page 112)

not ask the public to pay for their roadbeds except as the cost may be reflected in the freight rates; (2) that the commercial truck companies charge a freight rate somewhat similar to the railroads, and in addition expect the public to build the roadbed, and to build it heavy enough to carry their loads.

Railroad companies devote all their energy to the consideration of transportation problems, but transportation is but one of the countless problems facing political bodies. So, when we find ourselves limited by law, to say $1,000,000 for highway construction, it would seem, even from the commercial truck operators' viewpoint, that this sum should be spent for a total of 40 miles of highway suitable to carry a total unit load of approximately 20,000 pounds, rather than 20 miles of highway made suitable to carry a total unit load of 40,000 pounds. In other words, should highways be constructed of such strength and consequent limitation in mileage, as to permit, say ten producers to haul their products on one load, or should highways be constructed of reasonable strength and increased mileage, thereby permitting twenty producers to enjoy the benefits of a paved highway for reasonable loading?

Highways of reasonable strength, cost, at present prices, approximately $25,000 per mile, and highways of extra heavy construction, cost not less than $50,000 per mile, as exemplified by the cost of the special truck boulevard leading from Los Angeles to Wilmington. Having in mind the great proportion of lighter vehicles as against the limited number of heavy duty trucks, the greater mileage of reasonably strong highways surely is desirable from the standpoint of universal use. Furthermore, with this question put squarely up to the commercial truck operator, it would be surprising if he did not say he would be glad to reduce his load and accept the greater mileage of highway.

The time has arrived when a maximum limitation on loads must be determined and that such regulation be strictly and uniformly enforced. This determination must be made with due regard to universal, not specialized, service; to load-bearing capacities of standard types of pavements; and lastly, to unit costs as related to total available funds allowed by the statutes.

It is advisable that such limitation be placed at about 700 pounds static weight, per square inch of contact surface between highway and tire, or an equivalent in terms of channel width of tire. This limitation should hold until further improvements in truck and highway construction are developed .

Some Conclusions on Concrete Pipe for Irrigation Use

A co-operative investigation of the concrete pipe—its construction and use in irrigation—was begun in March, 1917, by the Department of Engineering of the State of California. Owing to the war little progress was made, and in the spring of 1919 the work was resumed and has since progressed in a highly satisfactory manner.

One hundred 6-in. specimen rings had been made, cured and tested and over 200 field and yard tests of manufactured pipe had been made. The materials used in the laboratory tests were shipped from representative localities over the entire state and each of 50 pipe yards have furnished pipe for testing purposes. The general conclusions which are drawn from the work thus far performed are summarized as follows in the recently issued biennal report of the Department of Engineering:

1. A high grade pipe can be made of either gravel or crushed rock providing they are good quality, well graded and contain no soft material.

2. The addition of a certain amount of rock dust not exceeding 20 per cent by volume, does not reduce the strength, and increases the density and imperviousness. A small admixture of clay when

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dry, well pulverized and free from organic matter, produces like results.

3. Other conditions being similar, the heavier the tamping, the greater the strength.

4. A lightly tamped pipe, if tested when saturated, will be found about 30 per cent weaker than if tested when dry.

5. A heavily tamped pipe, if tested when saturated, will show a decrease in strength of from 1 to 10 per cent from that shown when it is tested dry.

6. Pipe made with a dry mixture similar to that used in small hand-tamped plants, seeps badly in spite of proper grading, but can be made both strong and impervious by especially heavy tamping.

7. In general, hand-made pipe of a dry mixture seeps badly and has a low tensile strength, but these defects can be largely overcome by the use of a wet mixture.

8. Other conditions being similar, machine-made pipe, in small and medium sizes, is superior in all essential qualities to hand-made pipe. This applies to tamping and trowelling machines alike.

9. Newly made pipe should be thoroughly cured by continuous sprinkling if exposed to the sun for 6 to 8 days in summer and for a longer period in winter, or by periodic sprinkling for the same length of time when kept under roof.

10. The results of 93 field and yard tests of single joints of machine-made pipe showed an average tensile strength in the shell of 288 lb. per square inch. The results of 8 tests of pipe made with air-tamping machines. 204 lb., those of 19 hand-tamped pipe made from a wet mixture, 168 lb., and 39 tests of hand-tamped pipe made from a dry mixture, an average tensile strength of 130 lb. per square inch.

11. When the pipe was laid and the joints cemented in sets of 5 joints, the following average results were obtained: Eighteen tests of machine-made pipe, 259 lb. per square inch. Two tests of hand-tamped pipe made from a wet mixture, 165 lb., and three tests of hand-made pipe from a dry mixture showed an average tensile strength of 82 lb. per square inch.

The report also states that the relatively high tensile strength, as demonstrated by actual tests, of the greater part of the concrete pipe made in California, has led to the adoption by the California Association of Concrete Pipe Manufacturers of a tentative specification which requires, in adition to other stipulations, a tensile strength of 200 lb. per square inch in the shell, of pipe 16 in. or less in diameter, when tested to failure by internal water pressure. It will be noted that this requirement, applicable to all standard pipe 16 in. or less in diameter made hereafter by the members of this association, is equivalent to a head of 145 ft. on an 8in.- pipe, to a head of 115 ft. on a 12-in. pipe and to a head of 108 ft. on a 16-in. pipe.

California Contractors to Co-operate

In response to an appeal for co-operation made by Mr. C. W. Gompertz, president of the San Francisco Builders' Exchange, Los Angeles Chapter, Associated General Contractors of America, voted at its regular meeting, Sept. 1, to work in harmony with the San Francisco organization in its effort to establish the "open shop" or "American Plan" in the building industry in San Francisco and the Bay region. A committee was appointed to meet with a similar committee of the San Francisco Builders' Exchange and arrange a working agreement, particular-

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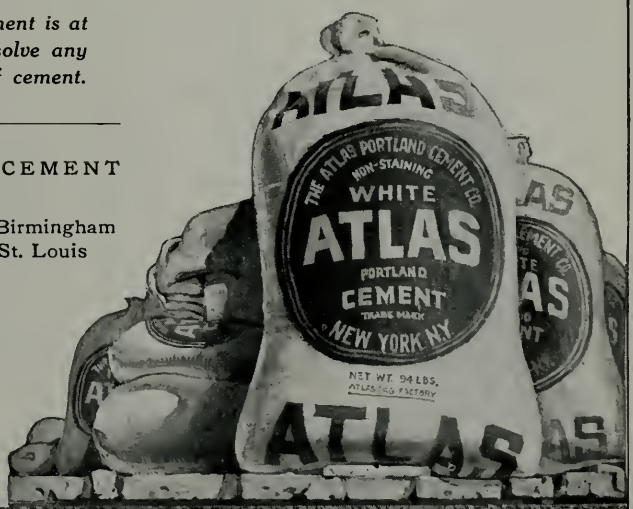

ATLAS-WHITE PORTLAND CEMENT

ly in the matter of maintaining a uniform wage scale for the two cities.

Mr. Gompertz appeared before the Chapter accompanied by Mr. D. Zelinsky, a member of the San Francisco Builders' Exchange. Mr. Gompertz made a very full statement of the present situation in the building industry at San Francisco, detailing the movement to establish the "American Plan," the means employed to bring it to a successful issue and plans to maintain it. He stated that all the crafts with the exception of the bricklayers had voted to return to work as individuals under the American Plan. Already the places of the bricklayers are being filled by outsdie men.

Mr. Gompertz outlined a plan for the creation of a non-partisan tribunal to fix wage scales in San Francisco when the present agreement expires Nov. 12. This plan has not definitely been worked out, but the proposed tribunal will be composed of men outside the building industry who have no direct interest in any part of it. This board will represent the public which pays the bills and which will naturally be disposed to treat all intersets with utmost fairness. He declared it was of the greatest importance that there should be some uniformity between the wages paid in San Francisco and in Los Angeles in establishing and maintaining a uniform scale. He admitted that responsibility for some of the unsatisfactory conditions existing in Los Angeles might be laid at the doors of San Francisco interests and saw an opportunity for mutual relations between the contractors of the two cities.

Gathering Road Data for Entire United States

There are approximately 61,000 miles of dedicated roads of all kinds in California and of this mileage 9% or 5,500 are in the State highway system. The maintenance of this tremendous State system is a constantly growing problem as the mileage of improved highways increases. At present over 3200 miles are constructed and under maintenance, but the traffic is doubling every thirty months

Wanted
first class
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on mountain highway grading. Salary up to $300 per month for right man. Answer P. O. Box 1103 Sacramento, giving experience and references.

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San Francisco

without any proportionate increase in funds for maintenance. The road problem is fast becoming of first importance among governmental activities, and it requires no stretch of the imagination to visualize the entire nation fretted with improved and semi-permanent highways.

Realizing the importance of the subject, the Federal Bureau of Public Roads, which recently made a survey of the California State system showing our present State paved roads earning us $20,000,000 per year, is undertaking a project of ascertaining the total mileage of rural and urban highways in the United States, the character and extent of their improvement and the origin and disbursement of funds for their improvement and maintenance.

Magnesite Interests Merge

An extensive merger of magnesite interests in California has been effected by Mr. Stanley H. Barrows, president of the National Kellastone Company, Chicago. Various interests have been combined and taken over by the Sierra Magnesite Company, a new corporation, of which Mr. Barrows is president. This company now owns the mines and property of the Porterville Magnesite Company, the mills of the American Magnesite Company, Los Angeles, and the Tulare Mining Company and will operate a total of something in excess of 2,500 acres of mines. The magnesite is used in the manufacture of exterior stucco, fireproof interior plasters and flooring of all kinds. New mills will be erected, and eventually the National Kellastone Company will establish a branch factory at Los Angeles, where the headquarters of the new concern are located. Officers of the new company, in addition to Mr. Barrows, are Messrs. J. A. Bernhard, San Francisco, vice president; Charles H. Howse, Chicago, treasurer, and E. Carl Tourje, Chicago, secretary.

Sells Contractors' Equipment

The Edward R. Bacon Co. has sold to Santa Clara County a No. 10-E Foote wheel paver to be used in construction of concrete roads in that county under the supervision of County Engineer I. L. Ryder, the work being done by force account. The California Highway Commission, through its Sacramento office, has placed an order with the Bacon Company, Northern California distributors for the Byers Machine Company for a No. 3 Auto-Crane for use at Gaviota, Santa Barbara County. The Edward R. Bacon Company has also just sold a 7-P Jaeger paver to Mr. D. P. Durham at Long Beach and a 7-P Jaeger paver to Mr. C. R. Butterfield at San Pedro.

From the First Vision To the Finished Building

MANY architects when they conceive the new building of concrete or stucco have Bay State Brick and Cement Coating in mind to help carry their vision to completion.

For Bay State transforms the drab color of cement or stucco to a rich white or one of many beautiful tints. It creeps into every pore and seals the walls against dampness. Driving rains cannot beat through it. Snow, hail, wind or burning sun will not harm it.

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Program of Competition for Redwood City High School

(Concluded from page 109)

Supply room between two laboratories.
Physics laboratory, 28x40, 24 pupils.
Chemistry laboratory, 28x40, 30 pupils.
Lecture room, 31x25, 58 pupils.
(Between the two laboratories, raised bank of seats, and projection room.)
Store room for chemistry.
Store room for physics.
Office.
Preparation room for lecture room.

Home Economics Department:
Sewing room, 30x45, 30 pupils.
Fitting room, 15x15.
Store room, 15x15.
Laundry, 10x30.
Dining room, 15x15.
Pantry.
Living room, 18x20.
Cooking room, 45x25, 24 pupils.
Kitchen, 10x15.
Bathroom, 10x12.
Bedroom, 10x12.
Locker room.
Office.

Commercial Department:
2 bookkeeping rooms, 40x25, 40 pupils.
Typewriting, 50x25, 60 pupils.
Business english, 22½x30, 35 pupils.
Recitation room, 22½x30, 35 pupils.
Supply sale room and bank.
Office.
Room for office training, 25x25.
Store room.
Book supply room.

Freehand Drawing Dept. or Art Dept.:
Freehand drawing dept., 30x27, 30 pupils.
Arts room, 30x27, 30 pupils.
Supply room.

Mechanical Drawing Department:
Mechanical drawing room, 26x32, 30 pupils.
Blue print room.
Supply room.

Library, 50x25, 60 pupils.
Office.
Supply and work rooms.
2 study halls, 30x65, 80 pupils.
(Each side of library and opening into library, easy access to English and history rooms.)

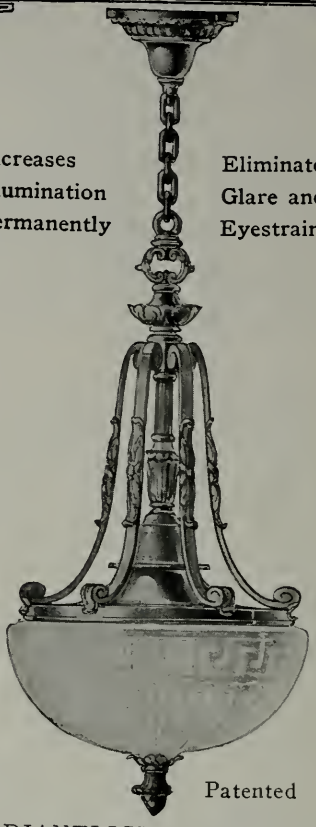
Music Department:
Choral room, 35x65, 42 pupils.
(Used for oral English, large open space or wide stage in front for band and orchestra practice and one act plays.) (Raised bank of seats.)
Harmony and history room, 21x30, 35 pupils.

Assembly Hall:
Seating capacity, 800 to 1000.
Stage 27 feet deep.
4 dressing rooms.
Space for orchestra in front.
Projection room.
Property room.

Physical Education:
Gymnasium floor 70x100, balcony for spectators.
Instructor's office, boys.
Instructor's office, girls.
Apparatus storage room.
Boys' showers.
Girls' showers.
Boys' locker rooms.
Girls' locker rooms.
Boys' toilet room.
Girls' toilet room.
Outside swimming pool, 25x75.
Quarter mile track.
Bleachers.
Girls' athletic field.

Cafeteria:
Dining room, capacity 200.
Kitchen.
Storage.

RADIANTLIGHT



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RADIANTLIGHT gives you 49 per cent more light on working surfaces than a bare lamp.

Enclosed and dust-proof. A permanent highly polished reflector inside the bowl and protected from dust. A reflector which is easily removed and cleaned. A reflector so focused as to direct the light to working plane, without glare. A reflector that directs the light rays as scientifically as the headlight of your automobile. No shadows, rings or spots of light on ceiling.

Demonstrations cheerfully given.

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When writing to Advertisers please mention this magazine.

Los Angeles Junior Orpheum Theater, now under construction at Eighth and Hill Streets, Los Angeles, Macdonald & Kahn, General Contractors, G. Albert Lansburgh, Architect

JUNIOR ORPHEUM

Selects the Finest

Because special color and texture in facing material were required and prompt delivery imperative, it was but logical that *Los Angeles Pressed Brick Company* was selected to furnish the Face Brick for the Los Angeles Junior Orpheum

Largest manufacturer of Face Brick in the West.
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Administrative offices:
- Principal's office.
- General office.
- Asst. principal's office.
- Public space or waiting room.
- Supply and record vault.
- Men teachers' rest room and toilet.
- Women teachers' rest room and toilet.
- Girls' rest room and toilet.
- Board room.
- Office of school paper.
- Student body office room.

Toilet rooms for boys and girls on each floor and in each wing.

Janitor's supply room of large size.

Janitor's supply room and slop sink on each floor and in each wing.

Suggestions as to location:
- Library and study halls together.
- Science and domestic science rooms together.
- Domestic science rooms near cafeteria.
- Commercial rooms near administrative offices.
- Music rooms near auditorium.
- Mechanical drawing department in the wing on Brewster street near the building in which the mechanical arts department will be placed.
- Auditorium and gymnasium so located that they can be separated from the remainder of the building for use of the public.
- Gymnasium in a structure separate from the main building, but connected by a covered corridor.
- Academic rooms so placed that another unit can be added to increase their capacity and the capacity of the school to 800 or 1000 pupils.

The sizes of the rooms are approximate.

The architects are advised to examine the grounds before making plans; due to presence of trees and a natural outcrop of rocks.

(Editor's Note.—The attention of San Francisco Chapter A. I. A., is respectfully called to the above program.)

1,000,000 Turns

to test the Dunham Packless Radiator Valve

A machine automatically opens and closes the valve one million times just as it would be opened and closed in actual service. The valve is under working steam pressure. In opening and closing it seven-eighths of a turn, a certain amount of stress is put on the special metal diaphragms of the valve.

Full details of the Dunham Packless Valve and other Dunham Specialties, are given in the 15th edition of Sweet's Index, pages 1404 to 1409.

The DUNHAM REG. TRADE-MARK HEATING SERVICE

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Administrative and General Offices: CHICAGO, ILLINOIS

Wall Board Made of Waste Sugar Cane

A new industry has been established in New Orleans, known as the Celotex Company, and will manufacture a wall board out of Bagasse or waste sugar cane. It is claimed the board is water proof and it weighs only six tenths of one pound per square foot, which makes it not only lighter than lumber but practically an artificial cork board.

According to an official of the company, "the use of this material on a house will practically convert it into a Thermos bottle—in summer it will be cool and in winter it will be warm. The use of Celotex for house building is but one of its many uses. Its insulating qualities are remarkable, and no other material is so well suited for the construction of incubators, bee hives, telegraph booths, phonograph rooms, and other places calling for absolute sound-proof and thermatic qualities."

Berkeley Market Building

The Boardman Estate will erect a one-story market and cold storage building on the northeast corner of Shattuck avenue and Alston Way, Berkeley, at a cost of $40,000. Mr. Jas. W. Plachek is the architect.

S-V-W KOVERFLOR TRADE MARK

A LIQUID FLOOR COVERING
For Outside and Inside Floors of Wood, Cement or Concrete
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USE FACE BRICK
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Detail Country House, Point Washington, Long Island. H. Van Buren Magonigle, Architect

THE practical and esthetic qualities of face brick make it the most durable, the most economical, and the most beautiful facing material for homes, from the simple cottage to the luxurious country house. In strength and durability, it is surpassed by no other material, and in varied beauty, charm of appearance, it opens up a field of artistic expression that surpasses them all.

The American manufacturers of face brick have far outstripped the rest of the world in the wide range of color tones and textures.

Any member of this association is at all times ready to help the architect find just the face brick he requires for a particular project, and in any other way help him solve his face brick problems.

AMERICAN FACE BRICK ASSOCIATION

1159 WESTMINSTER BUILDING · CHICAGO, ILLINOIS

Architect Honored

Mr. Edwin Bergstrom, president of the Southern California Chapter of the American Institute of Architects, has been elected as the representative of the Chapter in the California Technical Council for a period of two years. Plans for the organization of the California Technical Council, which is to be an association composed of the engineering, architectural and technical societies of the state, have been under way for two years and it is expected that a sufficient number of the societies will have soon endorsed its constitution to enable the representatives to hold their first meeting shortly for organization. The Southern California Chapter of architects has voted to become a charter member.

State Harbor Work

Mr. Frank G. White, head of the engineering department of the State Harbor Commission, reports that his department is busy on plans for considerable new work on the San Francisco waterfront. Besides a large reinforced concrete warehouse, plans have been prepared for a concrete wharf, one section of which will be at Pier 19 and a second section between Piers 21 and 25, and estimated to cost $100,000. Plans have also been made and a contract awarded for a frame and stucco bulkhead wharf building, 310x40 feet, at the foot of Pacific street, San Francisco.

Alameda Parochial School

Plans have been completed by Architect Will D. Shea, Chronicle building. San Francisco, for a two-story reinforced concrete Mission style parochial school of twelve rooms and auditorium for St. Joseph's Parish, Alameda.

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Merced and Patterson Residences

Architects Glass & Butner, Cory building, Fresno, have awarded contracts for a $25,000 one-story residence and garage to be built at Merced for Mrs. J. H. Simonson, and also for a $35,000 two-story residence and garage at Patterson, for Mr. J. D. Patterson, Jr.

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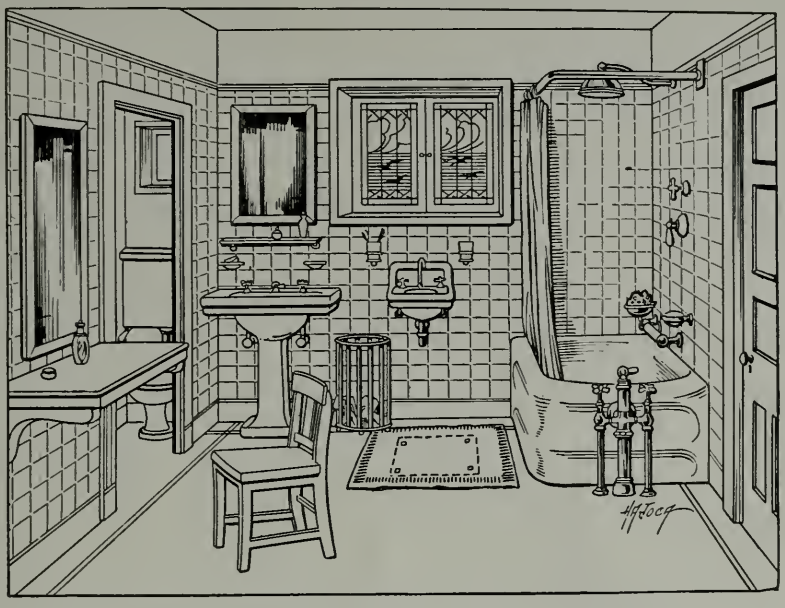

Bathroom equipped with "Hajoca" Plumbing Fixtures

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Architects specify them, owners are delighted with them, because "Hajoca" means *Quality* and *Service*

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San Francisco
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Superintendent of Construction
Specifications and Estimates
JOHN E. HAMILTON

Present Cost of Building Materials*

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, October 20, 1921.

All prices f. o. b. cars San Francisco or Oakland. For country work add freight and cartage to prices given.

American Institute of Architects' Fees

New work—6 per cent minimum basis. Alterations—7 to 10 per cent as a minimum basis. High class residence work—10 per cent as a minimum.

Bond—1½% amount of contract.

Brickwork—
Common, $38.00 per 1000 laid.
Face, $100.00 per 1000 laid.
Common, f. o. b. cars, $15.50 plus cartage.
Face, f. o. b. cars, $55.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (Delivered to building in carload lots)
12x12x3 in., 14 c. per square foot.
12x12x4 in., 15¾c. per square foot.
12x12x6 in., 22 c. per square foot.
12x12x8 in., 34 c. per square foot.
Hod carriers, $7.40 per day.
Bricklayers, $9.25 per day.
Lime—$3.25 per bbl.; carload, $2.75 per bbl.

Composition Floors—30c. per sq. ft.

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.25 per yd.
No. 4 rock	2.50 per yd.
Niles pea gravel	3.25 per yd.
Niles gravel	2.50 per yd.
Niles top gravel	3.00 per yd.
City gravel	2.25 per yd.
River sand	1.50 per yd.
Bank sand	1.00 per yd.

SAND
Del Monte, $1.25 to $1.50 per ton.
Fan Shell Beach, $2.50 to $3.00 per ton.
Car lots, f. o. b. Lake Majella.
Cement (f. o. b. cars)....$3.44 per bbl.
Rebate for sacks, 15c each.

Atlas "White"	$12.50 per bbl.
Medusa cement	$12.50 per bbl.
Forms	$25.00 per M

Wage—

Concrete workers	$7.50 per day
Cement finishers	8.35 per day
Laborers	6.95 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.25 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $8.35 per day.

Electric Wiring—$7.00 to $11.00 per outlet for conduit work (including switches).
Knob and tube average $3.25 to $6.00 per outlet.
WAGE—Electricians, $9.25 per day.

Elevators—
Prices vary according to capacity speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $4,200; direct automatic, about $3,700.

Excavation—
$1.55 per yard, if sand.
Teams, $10.00 per day.
Trucks, $21.50 to $30.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 20c per square foot.
Plate, $1.20 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 41c per square foot.
Obscure glass, 28c per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $7.85 per day.

Heating—
Average, $2.00 per sq. ft. of radiation, according to conditions.
WAGE—Steamfitters, $9.25 per day.

Iron—
Cost of ornamental iron, cast iron, etc., depends on design.
WAGE—Iron workers, bridge and structural, $8.35 per day.
Architectural iron workers, $7.40 per day.

Lumber—(Prices delivered to bldg. site)
Common, $34 per M (average).
Com'n O. P. (select), $45 per M (average)
Flooring—

1x3 No. 2	$72.00 per 1000
1x4 No. 1	73.00 per 1000
1x4 No. 2	70.00 per 1000
1x4 No. 3	47.00 per 1000
1x6 No. 2 and better	73.00 per 1000
1¼x4 and 6 No. 2	75.00 per 1000
Slash grain, 1x4 No. 2	48.00 per 1000
Slash grain, 1x4 No. 3	39.00 per 1000
No. 1 common run to T. & G.	35.00 per 1000
Lath	6.50 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.00 per bdle.
No. 2	.90 per bdle.
Red Cedar	1.10 per bdle.

Hardwood Floors—
Maple floor (laid and finished), 25c per foot.
Factory grade floors (laid and finished), 20c per foot.
Oak (quartered, finished), 40c per foot.
⅝ Oak (clear), 29c per foot (plain).
⅝ Oak (select), 27c per foot (plain).
⅝ Oak, quartered, sawed, clear, 35c.
WAGE—Floor layers, $9.35 per day.

Hardwood Floors (not laid)—

		Per M ft.
5/16x2" sq. edge	Clear quartered oak	$173.50
	Select quartered oak	121.50
	Clear plain oak	119.00
	Select plain oak	95.00
13/16x2¼" face	Clear quartered oak	210.00
	Select quartered oak	144.00
	Clear plain oak	157.50
	Select plain oak	114.00
	Clear maple	134.50
	Clear maple—white	178.00
13/16x3¼" face	Clear maple	$134.50
1⅛x2¼" face	Clear maple	134.50
⅜x2" face	Clear quartered oak	158.00

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box frame windows (average) with trim, $7.50 and up each.
Doors, including trim (single panel), $10 and up each.
Doors, including trim (five panel) ..... $9.00 each
Screen doors, $3.50 each.
Window screens, $1.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $9 each.
Dining room cases, if not too elaborate, $10 each.
Labor— Rough carpentry, warehouse heavy framing, $13.00 per 1000.
For smaller work, average, $25.00 to $35.00 per 1000.
WAGE—Carpenters, $8.35 per day.
Laborers—Common, $6.00 per day.

Marble—(Not set) add 60c up per ft. for setting

Columbia	$2.05 sq. ft.
Alaska	2.05 sq. ft.
San Saba	3.65 sq. ft.
Tennessee	2.50 sq. ft.
Verde Antique	4.55 sq. ft.

Wages — Marble setters, $7.40 per day; helpers, $5.55 per day. Marble polishers and finishers, $6.00 per day.

Painting—
Two-coat work, 35c per yard.
Three-coat work, 50c per yard.
Whitewashing, 5c per yard.
Cold water painting, 9c per yard.
Turpentine, $1.08 per gal. in cases and 93c per gal. in tanks.
Raw Linseed oil, $1.00 per gal. in bbls.
Boiled Linseed oil, $1.02 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one ton purchases; 12½c lb. for less than 500 lbs.
WAGE—Painters, $8.35 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.30 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $6.50 at yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. warehouse $2.15 per bbl.
Lime delivered on job in less than carload lots, $2.65 per bbl.
Hardwall plaster, $22.00 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Hydrate of lime, $22 per ton, f. o. b. warehouse.
WAGE—Plasterers, $10.20 per day.
Lathers, $9.25 per day.
Hod carriers, $8.35 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.25 per day.

Reinforcing Steel—
Base price for car load lots, $3.10 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $24 per ton.
WAGE—Housesmiths, $7.85 per day.

Roofing—
Five ply tar and gravel $6.50 per square for 30 squares or over.
Less than 30 squares, $7.00 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingle, $10.00 per square in place.
Cedar Shingle, $10.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $8.25 per sq.
Reinf'd Pabco, 20 yr. roof, $14 per sq.
Recoat, with Gravel, $3.00 per square.
Wage — Roofers $8.35 per day.

Rough Hardware—
Nails, per keg, $5.00 base.
Deafening felt, $100 per ton.
Building paper, P. & B.,
1 ply, $3.50 per 1000 ft. roll.
2 ply, $5.50 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.00 per hank 100 ft.
Common, $1.00 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 35c a square foot (not glazed).
WAGE—Sheet metal workers, $9.25 per day.

Stone—
Granite, average $11.00 sq. ft. in place.
Sandstone, average $7.00 sq. ft. in place.
WAGE—Stone cutters, $8.35 per day.
Stone setters, $8.35 and $8.80 per day.

Store Fronts—
Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.25 per lin. foot.
Zouri bar, $1.25 per lin. foot.
Zouri Underwriters' Specification sash, $1.60 per lin. foot.

Structural Steel—$130.00 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected) $121 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft. (Includes mullions and hardware.)

Tile—White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. foot, laid.
WAGE—Tile setters, $8.35 per day.

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Wedding Bells

Mr. Donald B. Parkinson, junior member of the firm of John Parkinson and Donald B. Parkinson, architects, of Los Angeles, and Miss Grace Wells were married early in September and have left on a trip to Europe where Mr. Parkinson will spend a year in the study of architecture.

Oakland Office Building

Architect Chas. W. McCall, Central Bank building, Oakland, has prepared plans for a one-story and mezzanine office building for Lloyd Bros., owners of the Oakland Garage. Structure will be built at Alice and Harrison streets, Oakland, and has been leased to the California State Motor Vehicle Department.

Gymnasium and Classroom Buildings

Architect Anton Johnson of Kingsburg is preparing plans for a $25,000 shop and gymnasium for the Fowler Union High School District. Drawings have been completed by the same architect for a grammar school building at Reedley, Fresno county.

Licenses Issued to Architects

The State Board of Architecture (Southern District) has granted certificates for the practice of architecture to the following: Leonard L. Jones, 472 Pac. Elec. Bldg.; Claud W. Beelman, with Architect Aleck E. Curlett; Theodore H. Pettit, with Architect H. C. Deckbar; and E. van den Hoven, Pasadena.

Apartment House

Messrs. Morrow and Garren, Chronicle building, San Francisco, have completed plans for a two-story frame and stucco residence flat building having eight five-room apartments, to be built on California street, near 14th avenue, San Francisco, for Mr. W. A. Savage.

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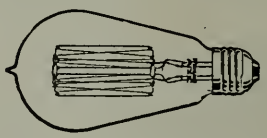

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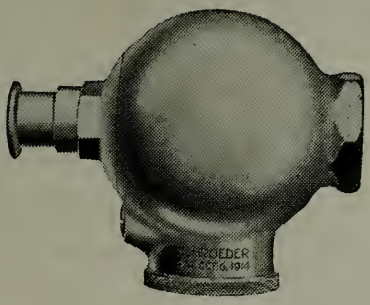

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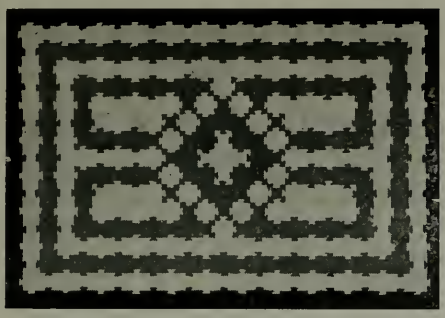

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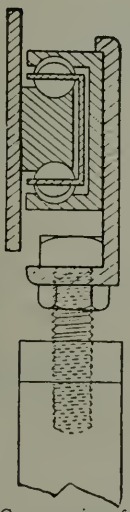

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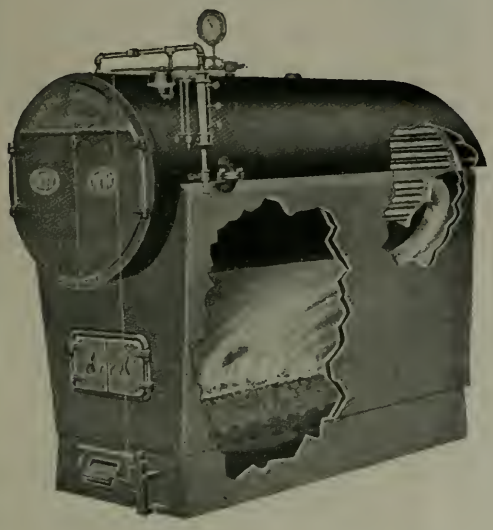

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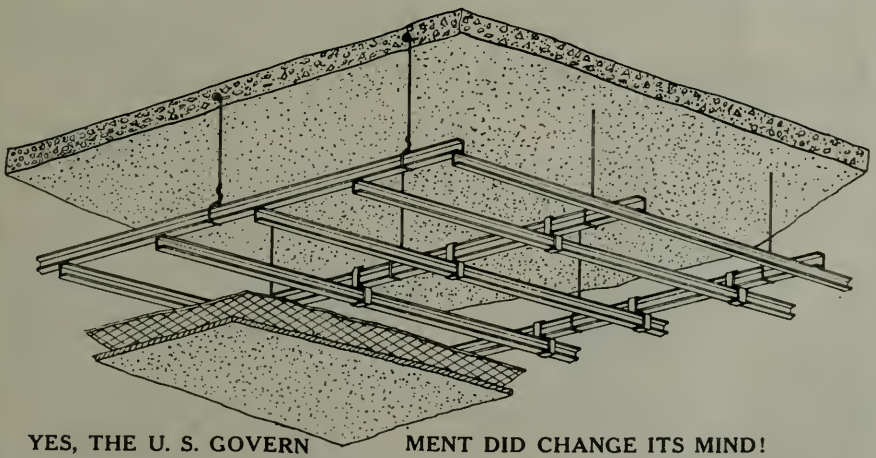

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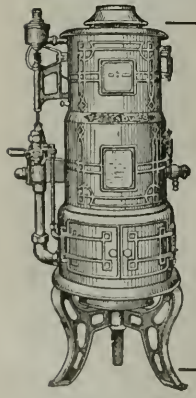

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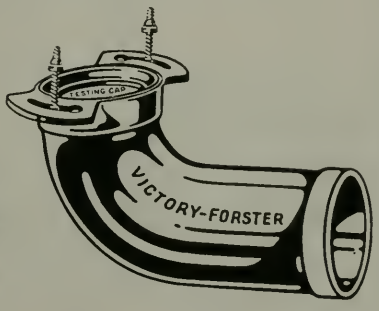

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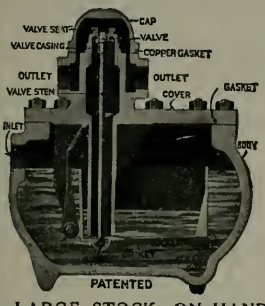

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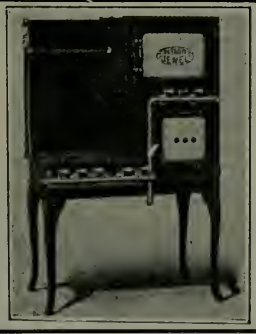
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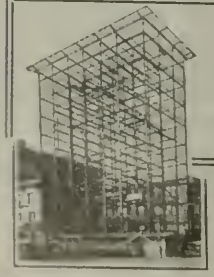

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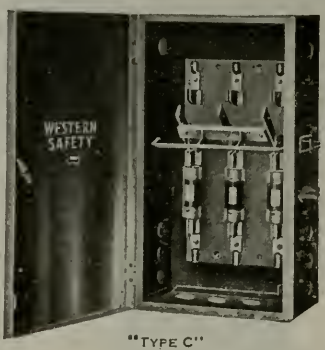

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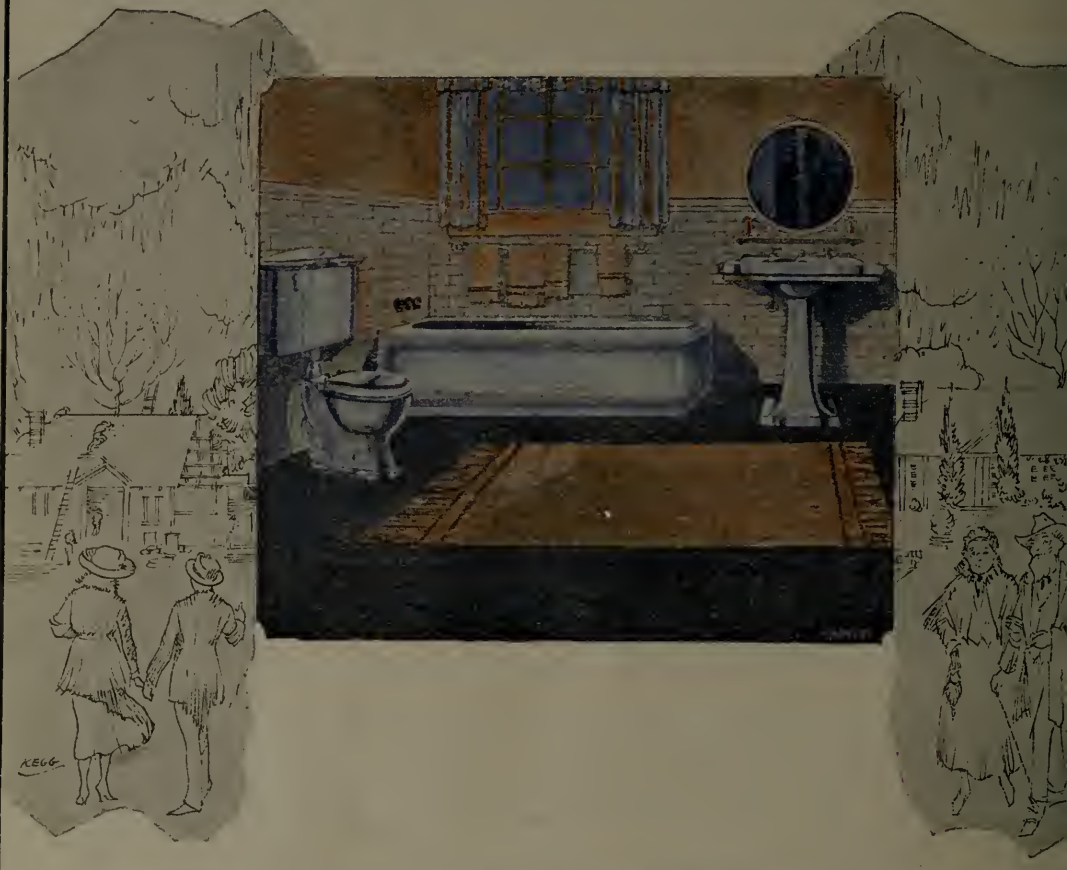

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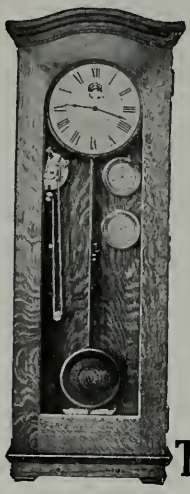

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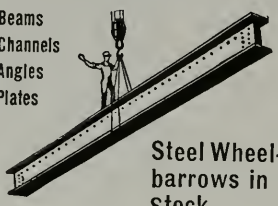

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All classes of general machinery

604 Mission St., SAN FRANCISCO Sutter 2790

Tank and Pipe Work
Gold dredges and their equipment

Key Route Basin, OAKLAND Lakeside 6300

Architects' Specification Index

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ART METAL
Federal Ornamental Iron and Bronze Co., 16th St. and San Bruno Ave., San Francisco.

ARCHITECTURAL TERRA COTTA
Gladding, McBean & Company, Crocker Bldg., San Francisco.
Tropico Potteries, Inc., Glendale, Cal.

ASBESTOS ROOFING, PACKING, ETC.
H. W. Johns-Manville Co., San Francisco, Los Angeles and Portland, Ore.

AUTOMATIC SPRINKLERS
Grinnell Co. of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Company, Hearst building, San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

AUTOMOBILES
W. L. Hughson Co., Geary St., at Van Ness Ave., San Francisco.

AWNINGS, TENTS, ETC.
W. A. Plummer, Front, at Pine St., San Francisco.

BANKS
First National Bank, Post and Montgomery streets, San Francisco.

BANK FIXTURES AND INTERIORS
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Home Mfg. Co., 543 Brannan St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.

BELTING AND PACKING
New York Belting and Packing Company, 519 Mission St., San Francisco.
H. N. Cook Belting Co., 401 Howard St., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

BLACKBOARDS
C. F. Weber & Co., 985 Market St., San Francisco, Los Angeles and Reno, Nevada.
Beaver Blackboards and Greenboards, Rucker-Fuller Desk Company, Coast agents, 677 Mission St., San Francisco; also Oakland and Los Angeles.

BLINDS—VENETIAN AND DIFFUSELITE
J. G. Wilson Corporation, Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox, Underwood Bldg., San Francisco.
Western Venetian Blind Co., Long Beach Ave., Los Angeles; C. F. Weber & Co., San Francisco.

BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 322 Monadnock Bldg., San Francisco.
Kewanee Water Supply System, Simonds Machinery Co., 117 New Montgomery St., San Francisco.

BOOK BINDERS
Abbott-Brady Printing Corp'n, 460 Fourth St., San Francisco.
H. S. Crocker Co., 565 Market St., San Francisco.

BONDS FOR CONTRACTORS
American Mutual Liability Insurance Co., Balboa Bldg., San Francisco.
Bonding Company of America, Kohl Bldg., San Francisco.
Bankers & Shippers Insurance Co. of New York, Insurance Exchange Bldg., San Francisco.
Globe Indemnity Co., 444 California St., San Francisco.
Fidelity & Casualty Co. of New York, Balfour Bldg., San Francisco.
National Surety Co. of New York, 105 Montgomery St., San Francisco.

BRASS GOODS, CASTINGS, ETC.
H. Mueller Manufacturing Co., 635 Mission St., San Francisco.

BRICK, PRESSED, PAVING, ETC.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
United Materials Co., Crossley Bldg., San Francisco.
Cannon & Co., Sacramento; and 77 O'Farrell street, San Francisco.

BRICK & CEMENT COATING
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
The Paraffine Companies, Inc., 34 First St., San Francisco.
Lapidolith, L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.
Wadsworth, Howland & Co., Inc., Boston, Mass., manufacturers of Bay State Brick & Cement Coating. Hambley & Son, agents, San Francisco and Los Angeles.

BRICK STAINS
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.

BUILDERS' HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn., coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Palace Hardware Company, Agents Corbin goods, 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora; Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

GRINNELL AUTOMATIC SPRINKLER

GRINNELL COMPANY

OF THE PACIFIC

VALVES
PIPE and FITTINGS

ENGINEERS AND CONTRACTORS
453 Mission Street, San Francisco

CHEMICAL FIRE EXTINGUISHERS and FIRE ENGINES

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A Flat Washable Oil Paint, made in soft Kalsomine tints—a practical article for Walls, Ceilings, Etc. Agency for Tamm & Nolan Company's High Grade VARNISHES and FINISHES, made on the Pacific Coast to stand our climatic conditions.

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151 Potrero Ave.-436 Market St., San Francisco--Portland-Seattle-Oregon

ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIALS, SUPPLIES, ETC.
- Abeel-Jensen Co., Call Bldg., San Francisco.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.
- Johns-Manville Company, Post and Mason Sts., San Francisco.

CABINET MAKERS
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco
- Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.
- Pacific Mfg. Co., San Francisco, Los Angeles and Oakland.
- Frank Portman, 1618 Mission St., San Francisco.

CARPETS
- John Breuner Co., 281 Geary St., San Francisco.
- D. N. & E. Walter, Mission near Second street, San Francisco.
- W. & J. Sloane, 216-228 Sutter street, San Francisco.

CASEMENT WINDOW HARDWARE
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
- Victory Manufacturing Co., Monadnock building, San Francisco.

CEMENT
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass. James Hambley & Son, Distributors, San Francisco and Los Angeles.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Cement coating, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
- Cannon & Co., Sacramento, Cal.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Tropico Potteries, Inc., Glendale, Cal.
- United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
- Pacific Electric Clock Co., 516 Wells-Fargo Bldg., San Francisco.
- Standard Electric Time Co., 461 Market St., San Francisco.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

COMPOSITION FLOORS
- "Linotol" plastic flooring, Hill, Hubbell & Co., No. 1 Drumm street, San Francisco; 410 San Fernando Bldg., Los Angeles.

CONCRETE CONSTRUCTION
- Barrett & Hilp, 918 Harrison St., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- P. A. Palmer, Monadnock Bldg., San Francisco.
- I. M. Sommer, 401 Balboa Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE HARDENER
- Gunn, Carle & Co., Inc., 444 Market street, San Francisco.

CONCRETE MIXERS
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Smith-Booth-Usher Co., San Francisco and Los Angeles.

CONCRETE REINFORCEMENT
- Edw. L. Soule Co., Rialto bldg., San Francisco.
- United States Steel Products Co., San Francisco. Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.
- Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
- Garnett Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, 918 Harrison St., San Francisco.
- Larsen-Siegrist Co., Inc., 807 Claus Spreckels Bldg., San Francisco.
- R. W. Littlefield, 357 12th St., Oakland.
- Lawton & Vezey, Call building, San Francisco; Plaza building, Oakland.

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Will protect your building and business from destruction by fire and reduce your Insurance Rate. Write for estimates.

Pacific Fire Extinguisher Company

FIRE PROTECTION ENGINEERS

424-440 Howard Street, San Francisco Manufacturing Plant, 298 Fremont St.

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Independent Automatic Sprinkler Company

Fire Protection Engineers

Approved Devices — 712 Hearst Building, San Francisco

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL—Continued
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Unit Construction Co., Phelan Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- John M. Bartlett, 357 Twelfth St., Oakland.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- Herbert Beckwith, 323 Newton Ave., Oakland.
- Collman & Speidel, 546 Monadnock Bldg., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 251 Kearny street, San Francisco.
- Fontanella & Teza, 1682 Eddy Street, San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- T. B. Goodwin, 180 Jessie St., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- McLeran & Co., R., Hearst Bldg., San Francisco.
- Robert Trost, 26th and Howard Sts., San Francisco.
- I. M. Sommer, 401 Balboa Bldg., San Francisco.
- S. G. Jackson, 351 12th St., Oakland.
- Jas. L. McLaughlin, 251 Kearny street, San Francisco.
- Alfred H. Vogt, 185 Stevenson street, San Francisco.

CONTRACTORS' EQUIPMENT
- Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
- Garfield & Co., Hearst Bldg., San Francisco.
- Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CRUSHED ROCK
- Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Gunn, Carle & Co., Inc., 444 First street, San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- "Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.
- Lapidolith, manufactured by L. Sonneborn Sons, Inc., Los Angeles, Portland, and Seattle; 269 Spear street, San Francisco.

DOOR HANGERS
- Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
- Reliance Hanger, sold by Waterhouse-Wilcox Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Oregon.
- Stanley Works, New Britain, Conn. Monadnock Bldg., San Francisco.
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
- Haws Sanitary Drinking Faucet Co., 1808 Harmon St. Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 166 7th St., San Francisco.
- San Francisco Elevator Company, Inc., 860 Folsom street, San Francisco.

ELECTRICAL CONTRACTORS
- Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
- Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
- Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
- Central Electric Company, 185 Stevenson street, San Francisco.
- NePage, McKenny Co., 589 Howard St., San Francisco.
- Newbery Electrical Co., 413 Lick Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Globe Electric Works, 1959 Mission St., San Francisco.
- M. E. Ryan, Redwood City, and 520 Clunie building, San Francisco.
- H. S. Tuttle, 766 Folsom St., San Francisco.
- Spencer Electric Co., 355 12th street, Oakland.
- Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
- Garnett Young & Co., 612 Howard St., San Francisco.
- Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
- Safety Electric Company, 56-65 Columbia Square, San Francisco.
- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
- Western Electric Safety Mfg. Co., Inc., 247 Minna street, San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 166 7th St., San Francisco.
- San Francisco Elevator Co., 860 Folsom street, San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

ESTIMATOR—BUILDINGS AND ENGINEERING WORKS
- Arthur Priddle, 185 Stevenson street, San Francisco.

FAIENCE TILE
- Tropico Potteries, Inc., Glendale, Cal.

FENCES—WIRE
- Standard Fence Construction Co., 245 Market St., San Francisco, and 310 12th St., Oakland.

PNEUMATIC WATER PRESSURE SYSTEMS

ALL SIZES AND TYPES—For Private Homes and Public Buildings

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Manufacturers and Installers of JOHNSON Heat Humidity CONTROL

For schools, residences, hospitals, banks, public buildings, also canneries and all kinds of industrial plants—Hot water tank regulators, air and water reducing valves.

Rialto Bldg., SAN FRANCISCO 605 Van Nuys Bldg., LOS ANGELES

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FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St.. San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.

FIRE-PROOF DOORS
- Forderer Cornice Works, 269 Potrero avenue, San Francisco.
- U. S. Metal Products Co., 330 10th street, San Francisco.
- Fire Protection Products Co., 3117 20th street, San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Independent Automatic Sprinkler Co., 712 Hearst Building, San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—DUST PROOF CEMENT
- L. Sonneborn Co., 269-271 Spear street, San Francisco.

FLOORS—HARDWOOD
- Oak Flooring Manufacturers' Association of the United States, Ashland Block, Chicago, Ill.
- Parrott & Co., 320 California St., San Francisco.
- Strable Hardwood Company, 511 First street, Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.
- Pacific Heating Company, Second and Grove streets, Oakland.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.
- W. & J. Sloane, 216 Sutter street, San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn.. Coast Sale offices, San Francisco, Los Angeles and Seattle, Wash
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
- American Window Glass Co., represented by L. H. Butcher Co., 862 Mission st., San Francisco.
- Cobbledick-Kibbe Glass Co., 175 Jessie St., San Francisco.
- Fuller & Goepp, 32 Page St., San Francisco, and Syndicate building, Oakland.
- W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
- Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
- California Granite Co., Gen. Contractors' Ass'n, San Francisco.
- Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

JOHN A. PETERSON, President B. HEINRICH, Vice-President

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GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT
Ellery Arms Co., 583 Market St., San Francisco.
A. G. Spalding & Bros., 625 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Dieckmann Hardwood Lumber Co., San Francisco.
Parrott & Co., 320 California St., San Francisco.
Strable Hardwood Company, First street, near Broadway, Oakland.

HEATERS—AUTOMATIC, GAS, ELECTRIC
Electric Sales Service Co., mfrs. of Therm-elect Water Heater, West Berkeley.
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING CONTRACTOR'S, EQUIPMENT, ETC.
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon streets, San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
C. A. Dunham Co., Sheldon Building, San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Knittle-Cashel Co., 224 Fifth street, San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
O. M. Simmons Co., 115 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 770 O'Farrell street, San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant streets, San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
L. Sonneborn Sons, Inc., 269-271 Spear street, San Francisco.

INTERIOR DECORATORS
Atherly Bros., 2032 Polk St., San Francisco.
Martin & Frederick, 1374 Sutter St., San Francisco.
John Breuner Co., 281 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
Taylor Galleries, 1635 Broadway, Oakland and San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
A. Quandt & Son, 374 Guerrero street, San Francisco.

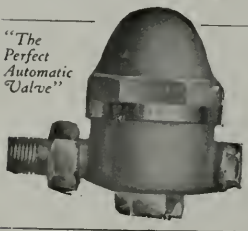
KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.



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LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.
- Pacific Gas & Electric Co., Sutter street, San Francisco.

LIGHTING FIXTURES
- Thomas Day Company, Mission, near Third street, San Francisco.
- Roberts Mfg. Co., 663 Mission St., San Francisco.
- Perfeclite Manufacturing Co., Seattle, Wash.; San Francisco Representatives, Myers & Schwartz, 75 New Montgomery street, San Francisco; 1119 S. Los Angeles street, Los Angeles.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., 562 Mission St., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
- W. & J. Sloane, 216 Sutter street, San Francisco.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Santa Fe Lumber Co., 16 California street, San Francisco.
- Sunset Lumber Company, First and Oak Sts., Oakland

MAGNESITE FLOORING, STUCCO, ETC.
- Dorite Mfg. Co., 116 Utah Street, San Francisco; Metropolitan Bldg., Los Angeles.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.
- Smith-Booth-Usher Co., San Francisco and Los Angeles.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Ray Cook Marble Company, foot of Powell street, Oakland.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
- Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.

METAL DOORS AND WINDOWS
- Fire Protection Products Co., 3117 20th St., San Francisco.
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 330 Tenth St., San Francisco.

METAL FURNITURE
- Forderer Cornice Works, 269 Potrero avenue, San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Frank Portman, 1619-20 Mission St., San Francisco.
- Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.

OFFICE EQUIPMENT
- C. F. Weber Co. 985 Market St., San Francisco.
- Rucker-Fuller Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.

OIL BURNERS
- Bunting Iron Works, 1215 First Nat. Bank bldg., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.
- W. S. Ray Manufacturing Co., 29 Spear street, San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE.
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Federal Ornamental Iron and Bronze Co., 16th St. and San Bruno Ave., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
Atherly Bros., 2032 Polk St., San Francisco.
Wayne & Williams, 1914 Fillmore St., San Francisco.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.
A. Quandt & Son. 374 Guerrero street, San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PIPE FITTINGS
Victory Manufacturing Co., Monadnock building, San Francisco.

PLASTER
"Arden" brand, A. C. Robertson, Builders Exchange, San Francisco. U. S. Gypsum Co.

PLAYGROUND APPARATUS
A. G. Spalding & Bros., 625 Market St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Thos. Brodie, 2119 Fillmore street, San Francisco.
Gilley-Schmid Company, 198 Otis street, San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
All-In-One Plumbing Fixture Corporation, 231 Oschner building, Sacramento.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Metals Mfg. Co., 1300 N. Main st., Los Angeles; 216 Hobart building, San Francisco.
Victory Mfg. Co., 423 Monadnock Bldg., San Francisco.
West Coast Porcelain Manufacturers, Rialto building, San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California street, San Francisco.

POWER PLANTS
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PRELIMINARY ESTIMATES, VALUATIONS
Arthur Priddle, 185 Stevenson street, San Francisco.

PUBLIC QUANTITY SURVEY PLAN
Arthur Priddle, 185 Stevenson street, San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
California Hydraulic Engineering & Supply Co., 70 Fremont St., San Francisco.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

QUANTITY SURVEYOR FOR CONTRACTORS
Arthur Priddle, 185 Stevenson street, San Francisco.

RADIATOR TRAPS
C. A. Dunham Co., Sheldon Bldg., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Building, San Francisco.
Gunn, Carle & Co., Inc., 444 Market street, San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Truscon Steel Co., 527 10th St., San Francisco.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, 765 Mission street.

ROOFING CONTRACTORS
Bender Roofing Company, Monadnock Bldg., San Francisco.
Hill, Hubbell & Co., No. 1 Drumm street, San Francisco, and San Fernando Bldg., Los Angeles.

ROOFING AND ROOFING MATERIALS
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SASH AND CABLE CHAINS
Smith & Egge Mfg. Co., Bridgeport, Conn.

SCENIC PAINTING—DROP CURTAINS, ETC.
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SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Forderer Cornice Works, 269 Potrero ave., San Francisco.
Knittle-Cashel Co., 224 Fifth street, San Francisco.
Pacific Heating Company, Second and Grove streets, Oakland.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SHINGLES—STONE
McClenahan Products Co., Inc., 112 Kearny St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

STATIONERY AND SUPPLIES
H. S. Crocker Co., 565 Market street, San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Western Pipe and Steel Co., 444 Market street, San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Moore Shipbuilding Company, Oakland.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Union Construction Co., 604 Mission street, San Francisco, and Key Route Fell, Oakland.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL ROLLING DOORS
Pacific Building Materials Co., Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles. Waterhouse-Wilcox Co., San Francisco.
Rolph, Mills & Co., San Francisco, Los Angeles, Portland and Seattle.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Lupton" steel sash, Waterhouse-Wilcox Co., agts., San Francisco, Los Angeles and San Diego.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.
Truscon Steel Company, 527 Tenth street, San Francisco.

STORE FRONTS
Zouri Safety Sash Bars—Cobbledick-Kibbe Glass Company, 175 Jessie St., San Francisco.

STUDDING—FIREPROOF STEEL
Steel Studding Company, 1216 Folsom St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES AND SWITCHBOARDS
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.
Safety Electric Co., 59 Columbia Square, San Francisco.
Western Electric Safety Switch Co., Inc., 247 Minna street, San Francisco.
Meyer's Safety Switch Co., 575 Howard Street, San Francisco.
Unit Electric Co., 450-60 Natoma Street, San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market street, San Francisco.
Rucker-Fuller Desk Co., 677 Mission street, San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Johnson Service, Rialto Bldg., San Francisco.

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Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
S. & S. Tile Co., 4th and Carrie streets, San Jose.
United Materials Co., Sharon Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles, Portland and Seattle.

VALVES—PIPES AND FITTINGS
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Radiator Valves. manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Co., 115 Mission St., San Francisco.
H. Mueller Mfg. Co., 635 Mission street, San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco
Victory Manufacturing Co., Monadnock building, San Francisco.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.
Everlasting Blow-off Valves. General Machinery and Supply Co., 39 Stevenson street, San Francisco.

VARNISHES
Bass-Hueter Paint Company, Mission, near 4th street, San Francisco, and all principal coast cities.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, Rialto Building, San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.

WALL PAPER AND DRAPERIES
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Gunn, Carle & Co., Inc., "Hydrate," 444 Market street, San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Smith-Booth-Usher Co., San Francisco and Los Angeles.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SASH CHAIN
The Smith & Egge Mfg. Co., Bridgeport, Conn.

WINDOW SHADES
National Window Shade Co., Inc., 244 Eddy Street, San Francisco.
W. & J. Sloane, 216 Sutter street, San Francisco.
D. N. & E. Walter, 562 Mission street, San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Crittall Casement Window Co., Detroit; Waterhouse & Wilcox, San Francisco, representatives.
Hauser Window Co., 157 Minna St., San Francisco.
The Kawneer Company, West Berkeley, California. (Simplex Fixtures.)
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FENCE
Standard Fence Co., 245 Market street, San Francisco; and 310 12th street, Oakland.

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Fink & Schindler, 218 13th St., San Francisco.
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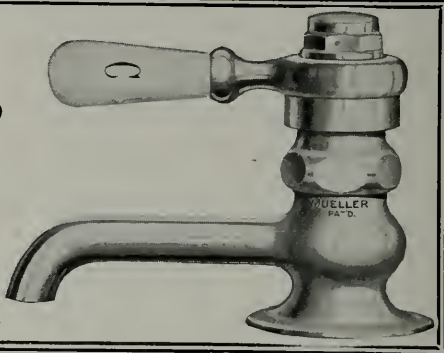

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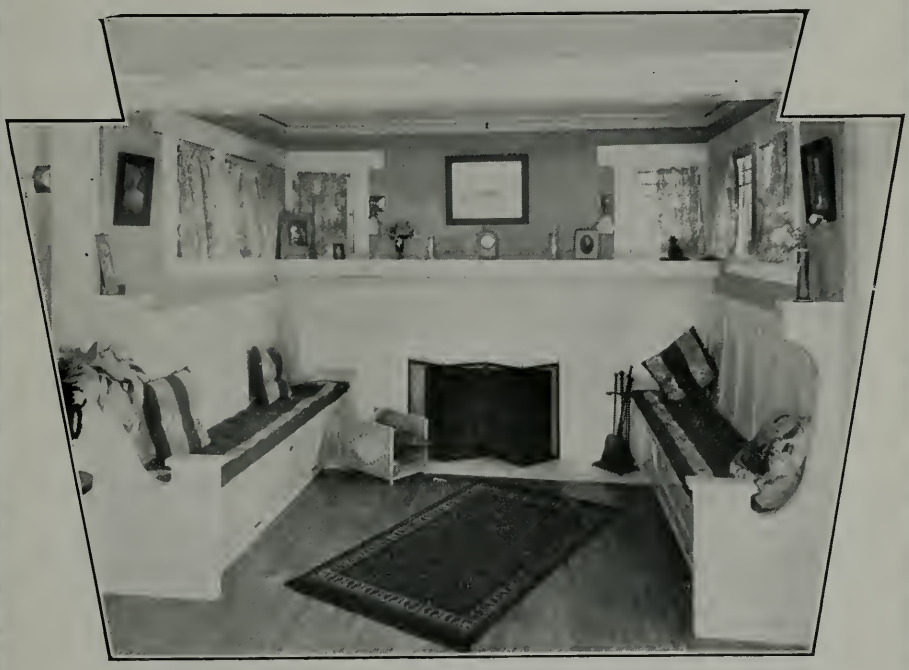

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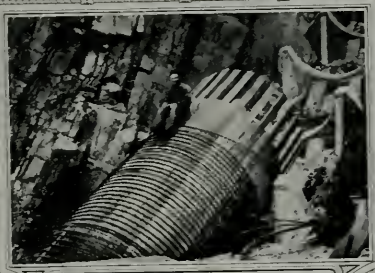

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This Advertisement is appearing in the November issue of Atlantic Monthly, Century, Harpers, Scribners, The Review of Reviews, World's Work

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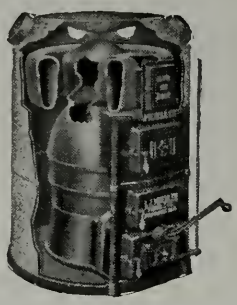

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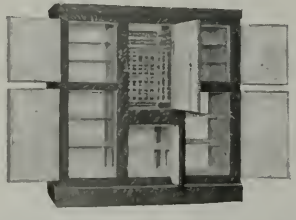

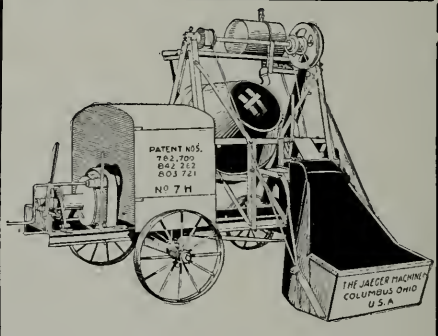

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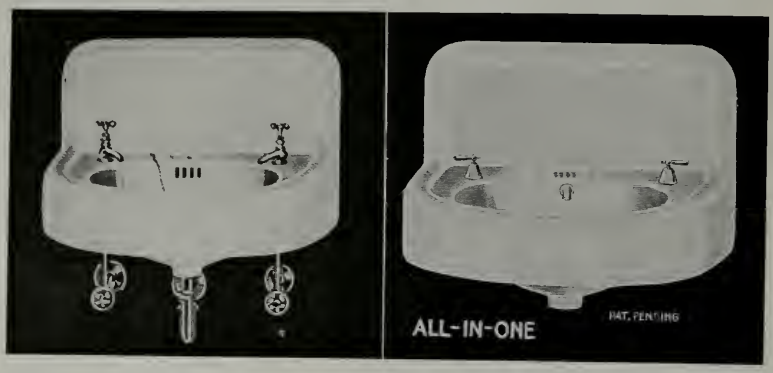

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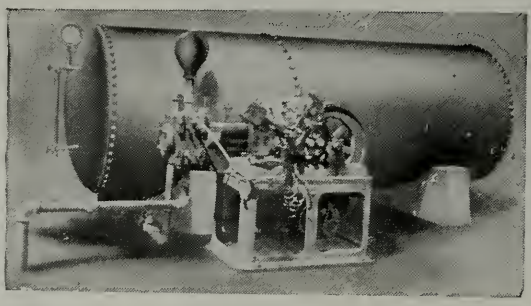

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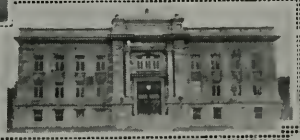
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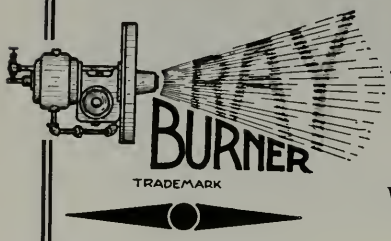

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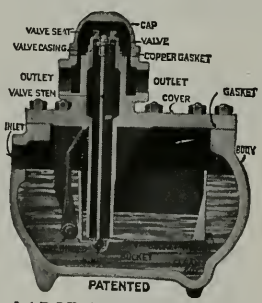

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AIRPLANE VIEW OF HOTEL DEL MONTE
Del Monte, California.

THE ARCHITECT AND ENGINEER

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SWIMMING POOL, HOTEL DEL MONTE, CAL.
LEWIS P. HOBART, ARCHITECT

THE
ARCHITECT
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NOVEMBER
1921

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The California Riviera*

By IRVING F. MORROW†

IN the past the answer to the "see America first" propagandist has been simple. Outside of natural scenery there has been comparatively little to see. Scenery, of course, is not to be disparaged. Vacation time finds me eager in quest of a place where there is nothing else. But traveling is not to be confused with vacation. In fact, the two things are scarcely compatible, as anybody who has conscientiously undertaken the former can testify. One never needs a vacation more than on returning from a sight-seeing trip. And besides heavy exactions on the body, the traveler is commonly in no vacation frame of mind. People take vacations—those who appreciate their true value—for escape from certain human associations; they travel abroad—those who understand its significance—largely to form new human contacts. However much the intelligent traveler may enjoy scenery along the way, his predominant interest is in what men have done and are doing. He will welcome an onerous detour to an uninteresting place which happened to be the site of an important event several hundred years ago. He will enthuse over a pilgrimage to a tomb devoid of any claim on his attention save on the score of an illustrious occupant. He will lose his head over a building quite barren of any intrinsic artistic merit because its stones are eloquent of the generations of men and women who have fashioned it with their labor and lived and toiled within its walls. Few people go to Europe for the sole purpose of seeing the Alps. When they cross the seas and undergo innumerable inconveniences and irritations of travel in strange lands, it is—making due allowance for an undeniable proportion of snobbishness—it is, by and large, human interest in one form or another which impels them.

*The photographs in this issue are by F. M. Fraley, photographer, Del Monte, Cal.
†Of the firm of Morrow & Garren, Architects.

Now this element of human interest is the one in which, until recently, our own country has been rather conspicuously deficient. Whenever and wherever the European has been under the necessity of altering the face of his native landscape, be it to clear a field, to lay out a road, and build a fence, a farm house, or a town, his has always been a caressing hand. His instinct has been to avoid any touch not calculated to enhance an existing charm or evoke a latent one. The result is a prevalent sense of harmony between man and his background, a pleasant feeling that association with the land has been long and affectionate. Foreigners' descriptions of their countries abound in such words as *sweet* and *venerable*. This human interest is at the bottom of what travelers call picturesque.

CYPRESSES ON THE SEVENTEEN MILE DRIVE, PEBBLE BEACH, CAL.

Now, as against these qualities, what has the American scene had to offer? To our own countryman any place which could have been called *sweet* would have been a back number. He has never stayed in one spot long enough nor regarded it carefully enough to conceive of veneration. Land he has occupied speaks of an association which has been perfunctory and an attitude which has been callous. His instinct has been a perverse and infallible one to desecrate it. In short, wherever and whenever he has laid his hand on his native landscape, it has been the heavy hand of indifference and incompetence.

This, in the last analysis, is why sight-seers have preferred to travel in Europe. People travel largely for these evidences of human association (I am omitting always those actuated by motives of snobbishness). And there the human implications have been lovelier. One might even go further, and say that, with the supersensitive and indiscriminating (as

well as with the snobs) this situation has led to an assumption that native scenery is inherently inferior in quality to foreign. Many people sincerely believe that there is no bay in the world to compare with that of Naples; no mountains to compare with the Alps; no river to compare with the Rhine; and so on. Political contingencies of the past few years have doubtlessly so far operated toward a revision of attitude on the last item that most people would probably now contend that they never had really liked it anyway. But as to the former items and numerous similar ones there has grown up a tradition too definite to be neglected even by parties who have never even seen the localities involved. It is this acquiescence which demands a challenge; a challenge all the easier

CARMEL BAY FROM HEIGHTS ABOVE PEBBLE BEACH, CAL.

to press of late years because sensitive Americans have been coming into a realization that our own land deserves respectful treatment. Our native landscapes are rich in possibilities; and we now demand—and show—less ruthlessness and more sympathy in our contacts with nature. When we lay hand upon our surroundings we cultivate a delicacy of touch calculated to evoke the interest not only of our contemporaries, but of our descendants. Future generations can look back and feel that we have not been altogether heedless of our natural heritage.

Happily this reversion has come before some of our most priceless treasures were despoiled. When one considers the development, say, of large parts of the matchless site of the city of San Francisco, it is a subject for profound relief that the "improvement" of other regions along the California coast has been delayed to a day capable of understanding the nature of the problem involved and appreciating its seriousness. Sup-

pose, for instance, that that well-known bit of coast between the towns of Monterey and Carmel had been exploited by the type of real-estate operator to whom improvement is synonymous with cutting trees, and development signifies rows of bungalows with kindling-wood eaves and cobble-stone porches. Such things have happened, and might conceivably have happened once again; but the very suggestion makes one shudder.

For here is a strip of coast which is one of nature's unique gifts. Here are rugged headlands against which the blue Pacific waters are breaking in never-ending fantasies of white spray; sheltered pools and lagoons between cliffs where clear, restless water assumes the marvelous, almost iridescent hues of rocks and sea life—ochre, sienna, madder, viridian,

CYPRESSES ON THE SEVENTEEN MILE DRIVE, PEBBLE BEACH, CAL.

and darkest bottle green; tree-mantled hills that follow the shore, now withdrawing from the sea behind idyllic stretches of level greensward, now advancing to the very brinks of the cliffs. This forest is composed in large part of two trees which are unique to this spot, the Monterey cypress and the Monterey pine. The cypress is among the hardiest and most adventurous of growing things. It sends its roots down into crevices in the rock and clings to wind-swept promontories where it may almost catch the storm's spray. It is among the oldest of living things; the fantastic forms of its bleached branches and heavy mats of black foliage bespeak ages of endurance. The pine is perhaps more approachable, more human, but no less picturesque. Young trees, or those in the protection of the forest, are fresh in hue and full in form. Where it grows on the exposed edge of the forest it can be as fantastic as the cypress. In isolated groups or groves its forms and massing become superb. The *pinetas* of Del Monte are in no

way inferior to the far-famed Italian ones of the Borghese Gardens or the outskirts of Naples. From the hillside forest commanding Pebble Beach and Carmel Bay one overlooks a view equal to any of those famous foreign ones which have become parts of the tourist tradition. Through and over ranks of descending trees one glimpses the white curve where sea meets land, along the cliff tops an emerald margin (the loveliest of golf links), and up and down the coast long blue promontories that reach out into bluer water.

It has become a commonplace of tourist opinion, an orthodox tradition, one might say, to hold that there exists no scenic rival to that strip of French and Italian shore line known as the Riviera. This conviction owes its preva-

CYPRESSES ON THE SEVENTEEN MILE DRIVE, PEBBLE BEACH, CAL.

lence to the circumstances touched on above, and to their blinding effect on minds lacking independence of vision. Some day it will be realized that it is no idle provincial boast to set on a footing of entire equality the California coast from Del Monte, through Monterey and Carmel, and to the cliffs below Carmel Bay; above all, perhaps, the region of Pebble Beach along the famous Seventeen Mile Drive. Likewise the development of that human interest which I have declared so essential to general human appreciation, a development which here is still only in its initial stages, is proceeding in a fashion and with a distinction which will leave it second to none; as is amply demonstrated in the illustrations of the following pages. To Europeans the Mediterranean Riviera is a supremely civilized recreation ground, an essential part of the life and culture of the whole community. Let this, then,—and I use the term more as suggesting an analogy in significance than any imitation or subservience—be the California Riviera.

(View overlooking Carmel Bay.)

HOUSE FOR MR. W. W. CROCKER, PEBBLE BEACH, CAL.
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(This house has been inadequately photographed because still unfinished.)

HOUSE FOR MR. W. W. CROCKER, PEBBLE BEACH, CAL.
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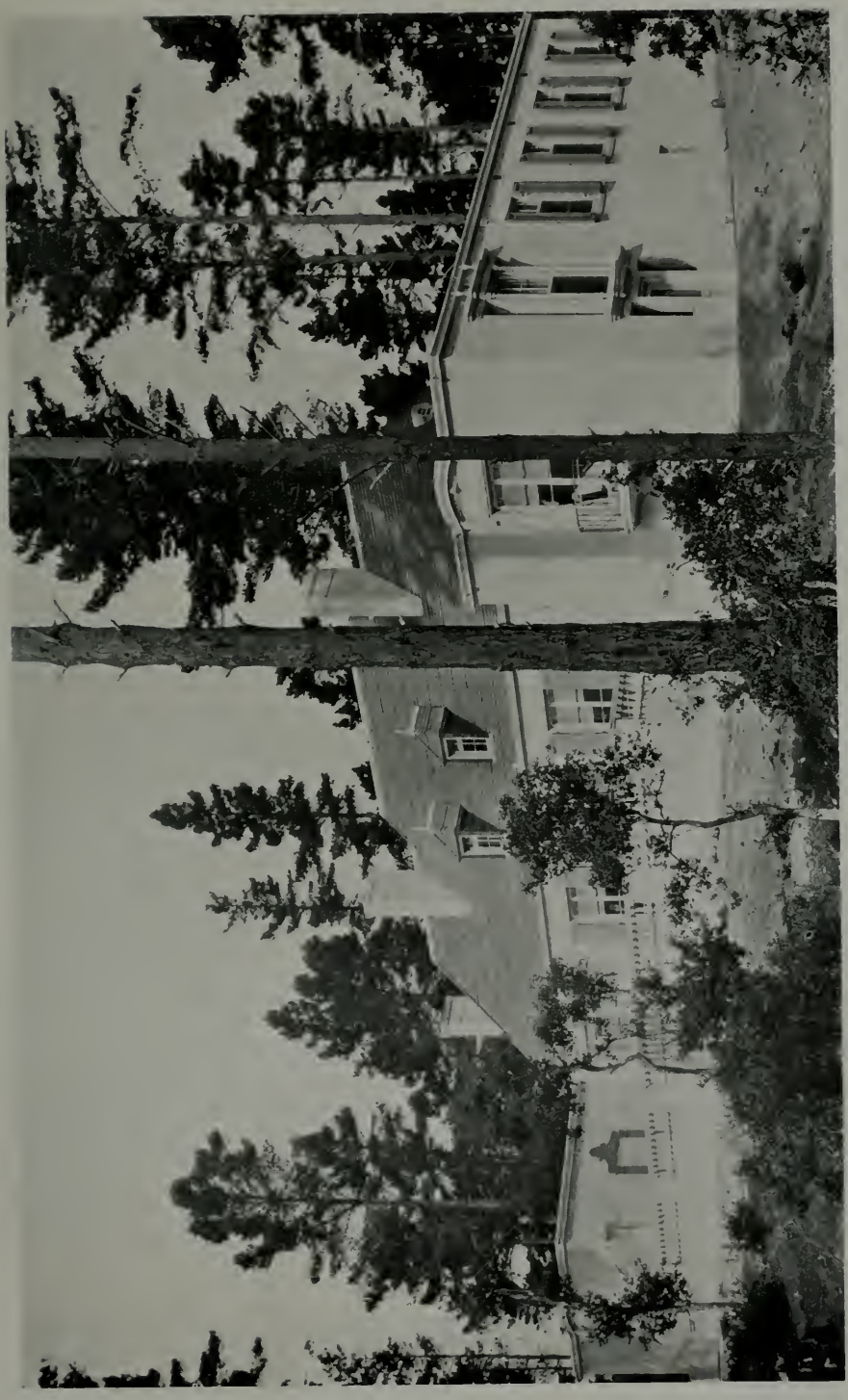

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LIVING ROOM, HOUSE FOR MR. CHARLES F. DILLMAN, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

DEL MONTE LODGE

Naturally, as the development of the Monterey peninsula has progressed, architects have not been slow to take advantage of the opportunities offered by situations and backgrounds so unique. And of all the architects who have been fortunate enough to work around Pebble Beach, none has been more fortunate than Mr. Hobart in the number of buildings which have fallen to his lot. I might also add that none has shown himself in more active sympathy with the varied possibilities of the region.

Del Monte Lodge is on the famous Seventeen Mile Drive. It stands at the head of the golf links which stretch along the table land above the ocean

DINING ROOM, DEL MONTE LODGE, PEBBLE BEACH, CAL.
Lewis P. Hobart, Architect

cliffs, and is removed from the shore by a narrow strip of grass scattered with tall, open pines. Technically a hotel, the Lodge in reality partakes more of the nature of a country club for the residents of Pebble Beach.

Mr. Hobart's building has mediated judiciously between conflicting claims. On the one hand there was the native scenery, informal, with even a touch of wildness. A less disciplined intelligence might readily have fallen into the grotesque extravagances of the "rustic," with all the familiar paraphernalia of useless un-barked outlookers and railings, cobble-stone terraces and fireplaces, etc., etc. On the other hand there was a clientele both exacting and sophisticated. A less sensitive feeling for propriety might have sacrificed all balance by imposing a ruthlessly formal building. Mr. Hobart has avoided the sentimental extreme as well as the cynical one. The building is amply dignified for its purpose, as well as amply naif for its place.

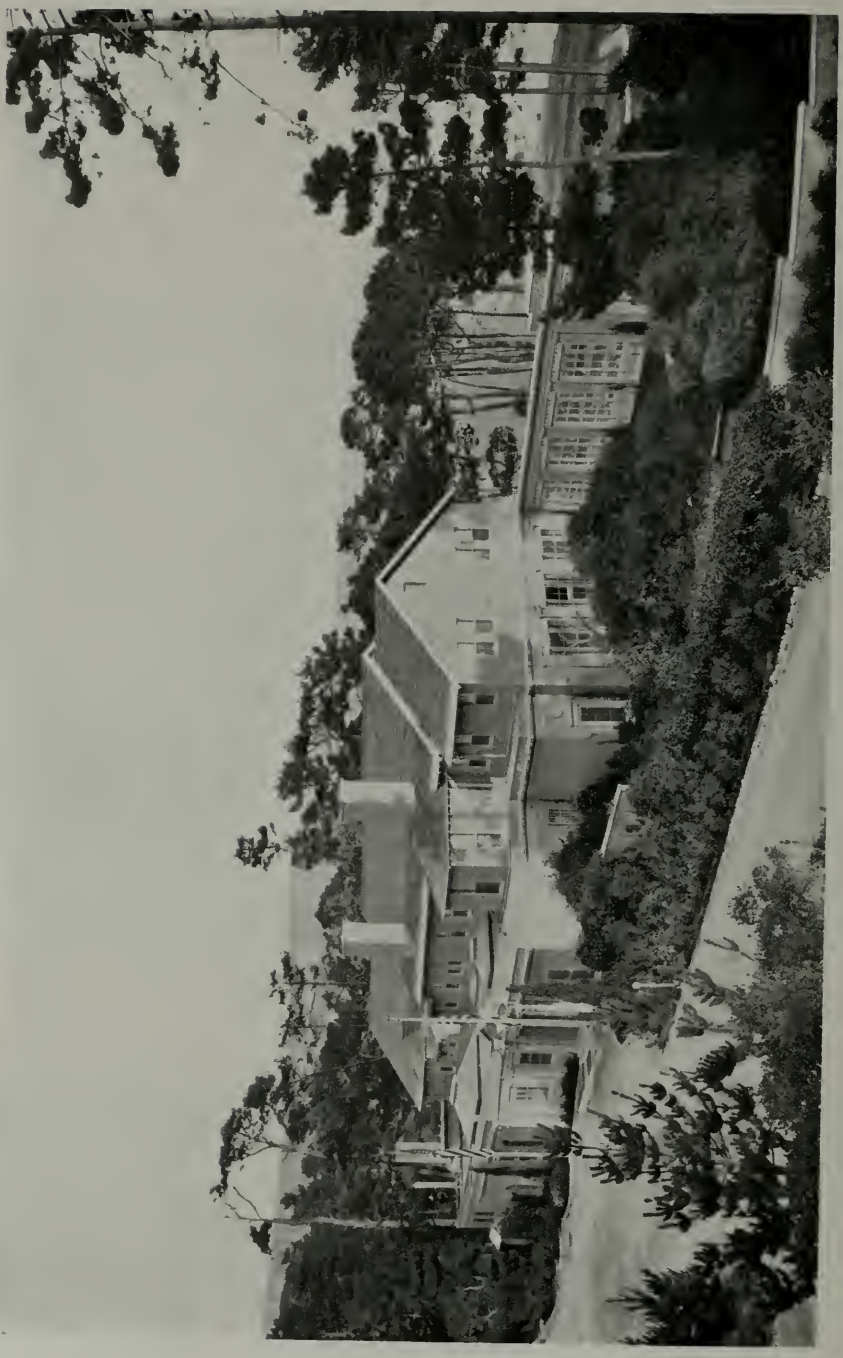
It strikes that delicate balance between all the factors to be considered which we call distinction. The composition has grace and poise; it is handled firmly but delicately, with no lapses from perfect taste. The result is conspicuously restful.

The interiors of the Lodge—Lounge Room, Dining Room and Writing Room—are admirable. They are rich without the slightest taint of vulgarity or over-luxuriousness; formal without the slightest suggestion of coldness or aloofness; well-bred with no touch of snobbishness. The color is quiet and harmonious.

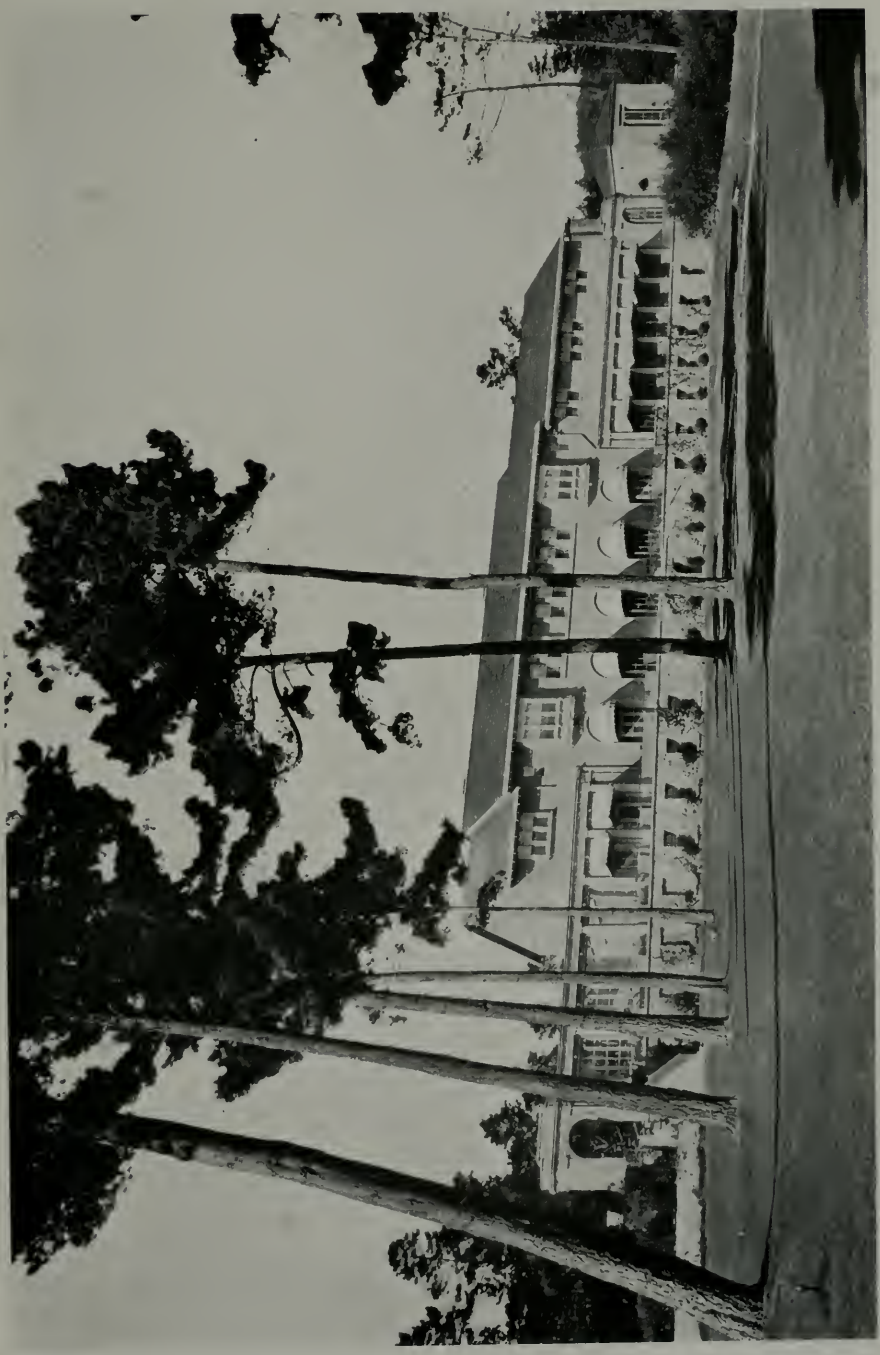
The delicate adjustment between this building, its purpose and its sur-

LOUNGE ROOM, DEL MONTE LODGE, PEBBLE BEACH, CAL.
Lewis P. Hobart, Architect

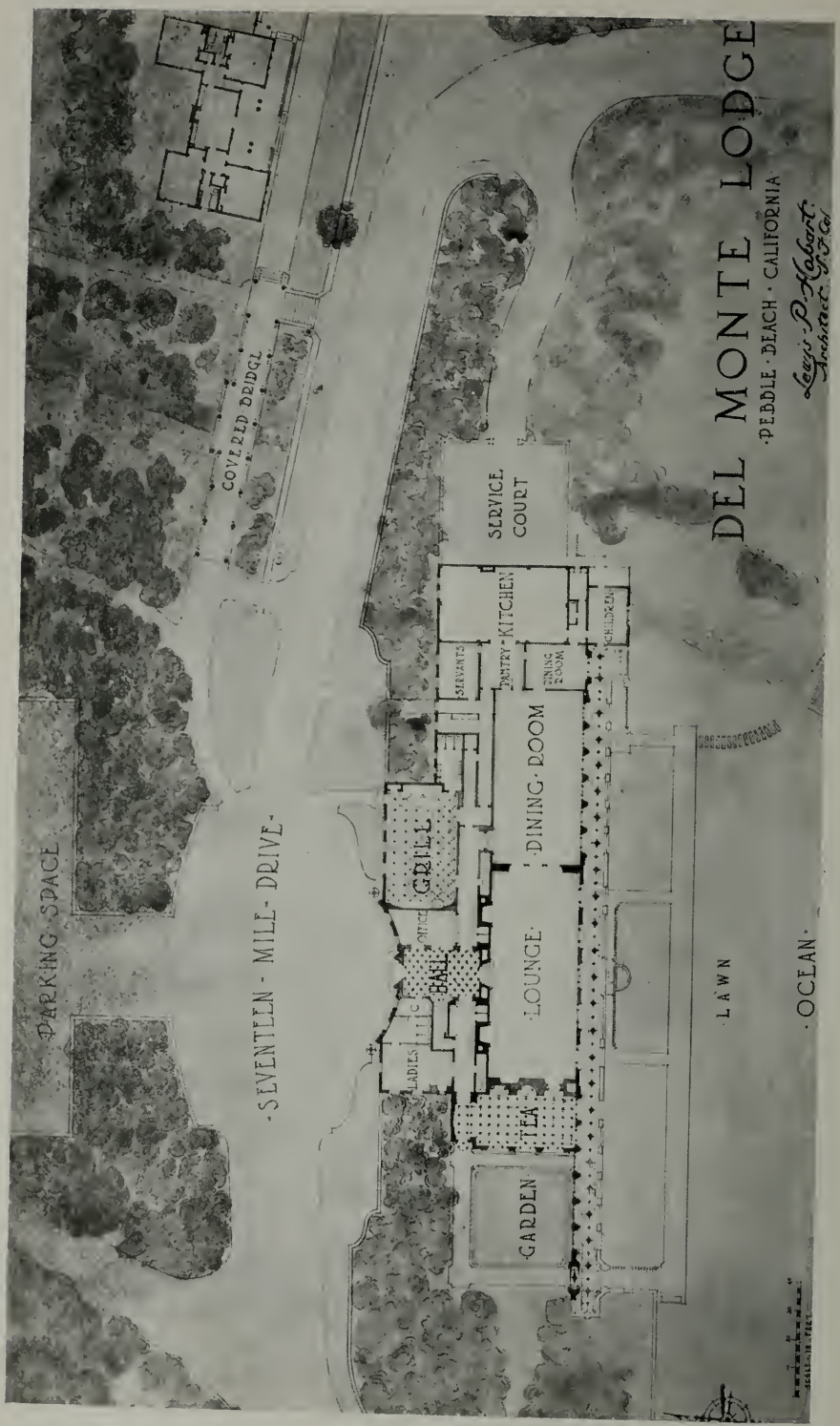
roundings is to me a subject of particular significance. People of a sentimental turn of mind sometimes contend that these country sites are desecrated by even the best of buildings and that it is a misfortune that anything should be suffered to intrude on their pristine charms. The question is purely academic, because they must and will be used, and under the circumstances the only reasonable course is to develop them as harmoniously as possible. Furthermore, I do not know that I can admit the validity of the sentimentalist attitude even on theoretical grounds. I am not sure that the tall, thin pines between Del Monte Lodge and the ocean are not more effective with the clean lawn beneath them and the long, horizontal lines of the quiet, gray building behind, than they ever could have been against a background of other trees and shrubbery, before the advent of the human note.



VIEW FROM ROAD SIDE, DEL MONTE LODGE, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT



VIEW FROM OCEAN SIDE, DEL MONTE LODGE, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT



PLAN, DEL MONTE LODGE, PEBBLE BEACH, CAL.
LEWIS P. HOBART, ARCHITECT

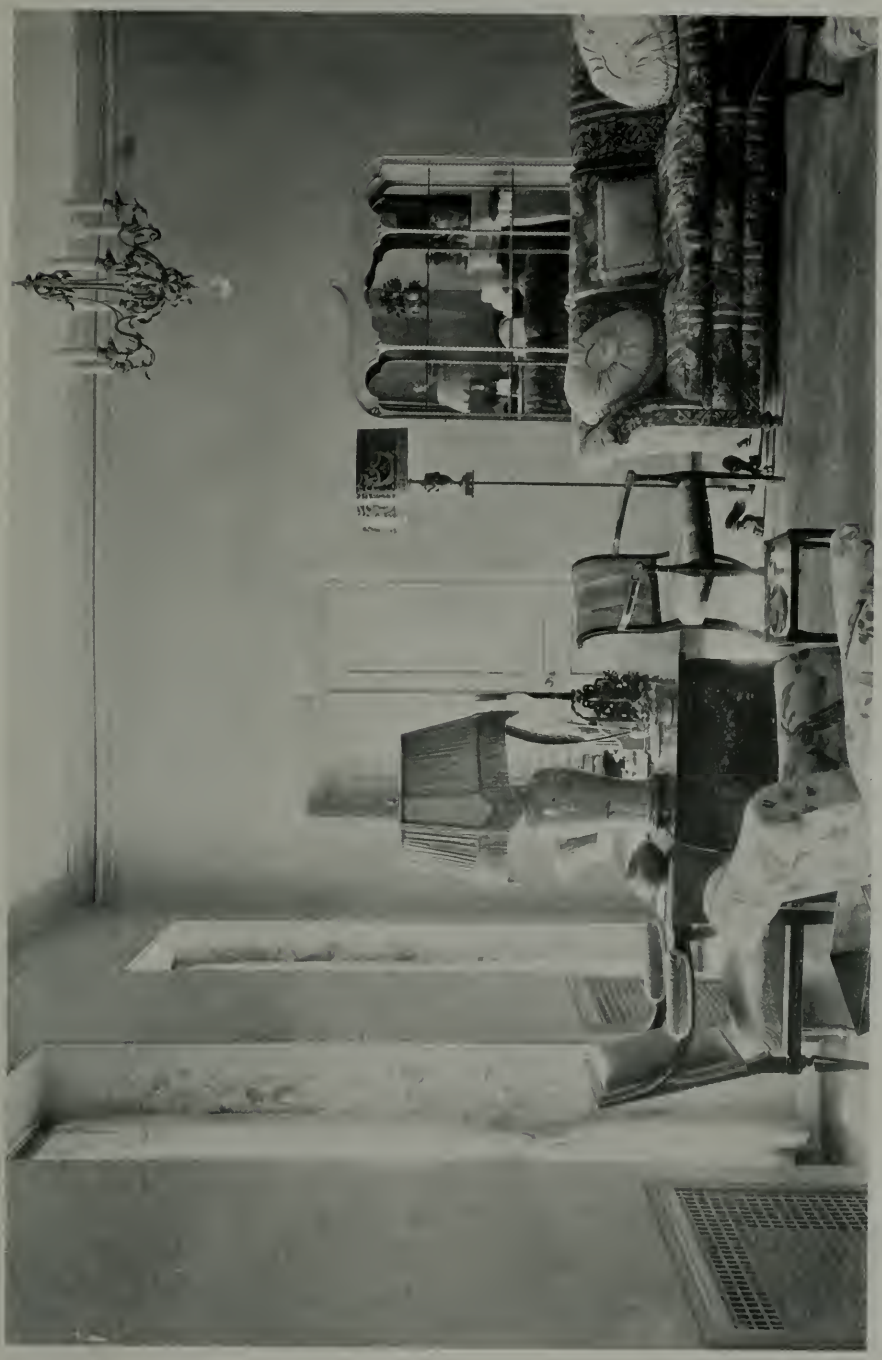
COTTAGES AT DEL MONTE LODGE, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

(Showing house of Mr. John S. Cravens beyond)

HOUSE FOR MR. FREDERICK J. RODGERS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

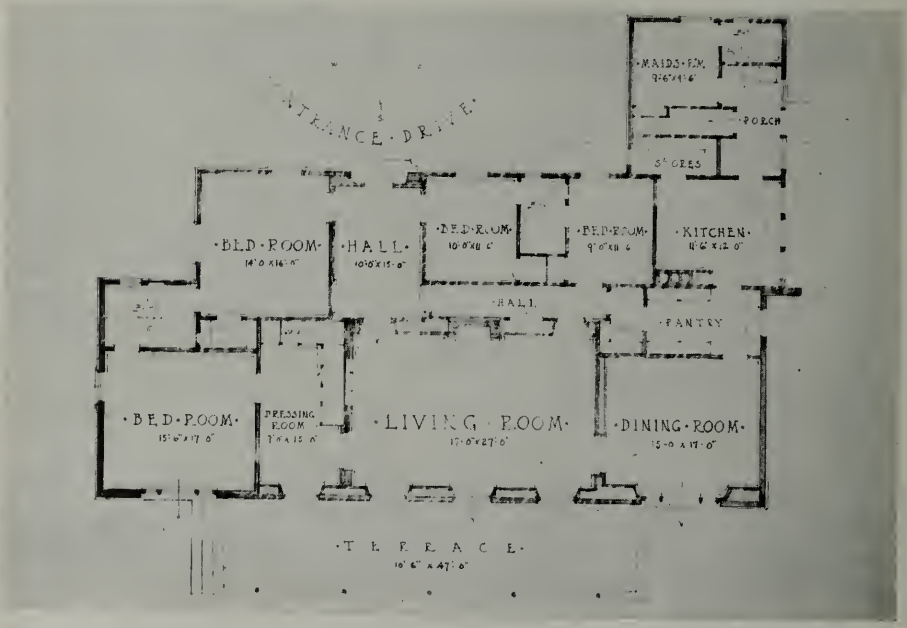
HOUSE FOR MR. J. V. RITTENHOUSE, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

HOUSE FOR COL. JOHN HUDSON POOLE, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT



LIVING ROOM, HOUSE FOR COL. JOHN HUDSON POOLE,
PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

PLAN OF COMPLETED BUILDING



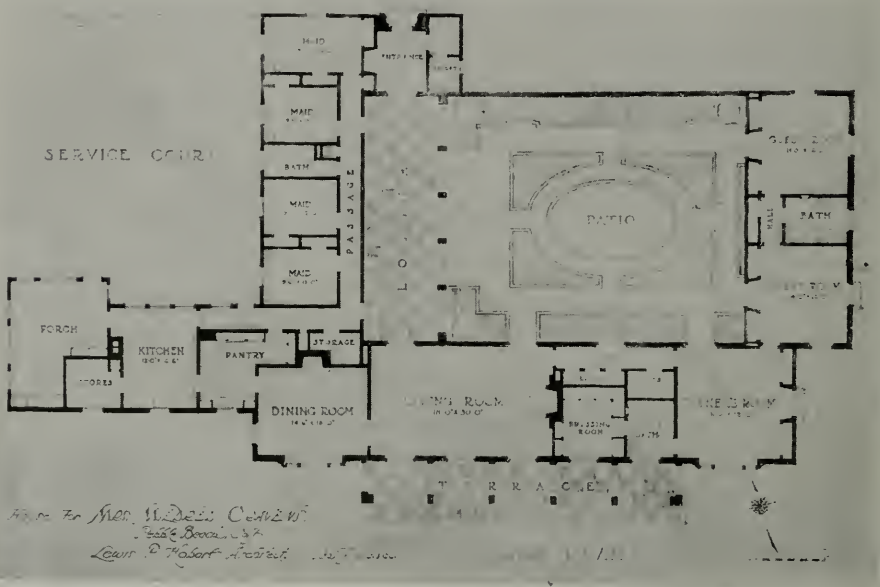
PRESENT PLAN, HOUSE FOR COL. JOHN HUDSON POOLE, PEBBLE BEACH, CAL.
Lewis P. Hobart, Architect

DINING ROOM, HOUSE FOR COL. JOHN HUDSON POOLE, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

THE CRAVENS HOUSE

The house of Mr. John S. Cravens is built on the fringe of the wood. Behind it is the dark pine forest; before it, through an opening between oak trees, is the level, green stretch of the golf course, which drops off sharply at the cliffs to the sea. The site is practically level.

This house is one of the most interesting schemes which Mr. Hobart has developed. It is of one story, laid out around a patio in the Spanish or Mexican fashion. The entrance is through the loggia which bounds one side of the patio.



PLAN, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL.
Lewis P. Hobart, Architect

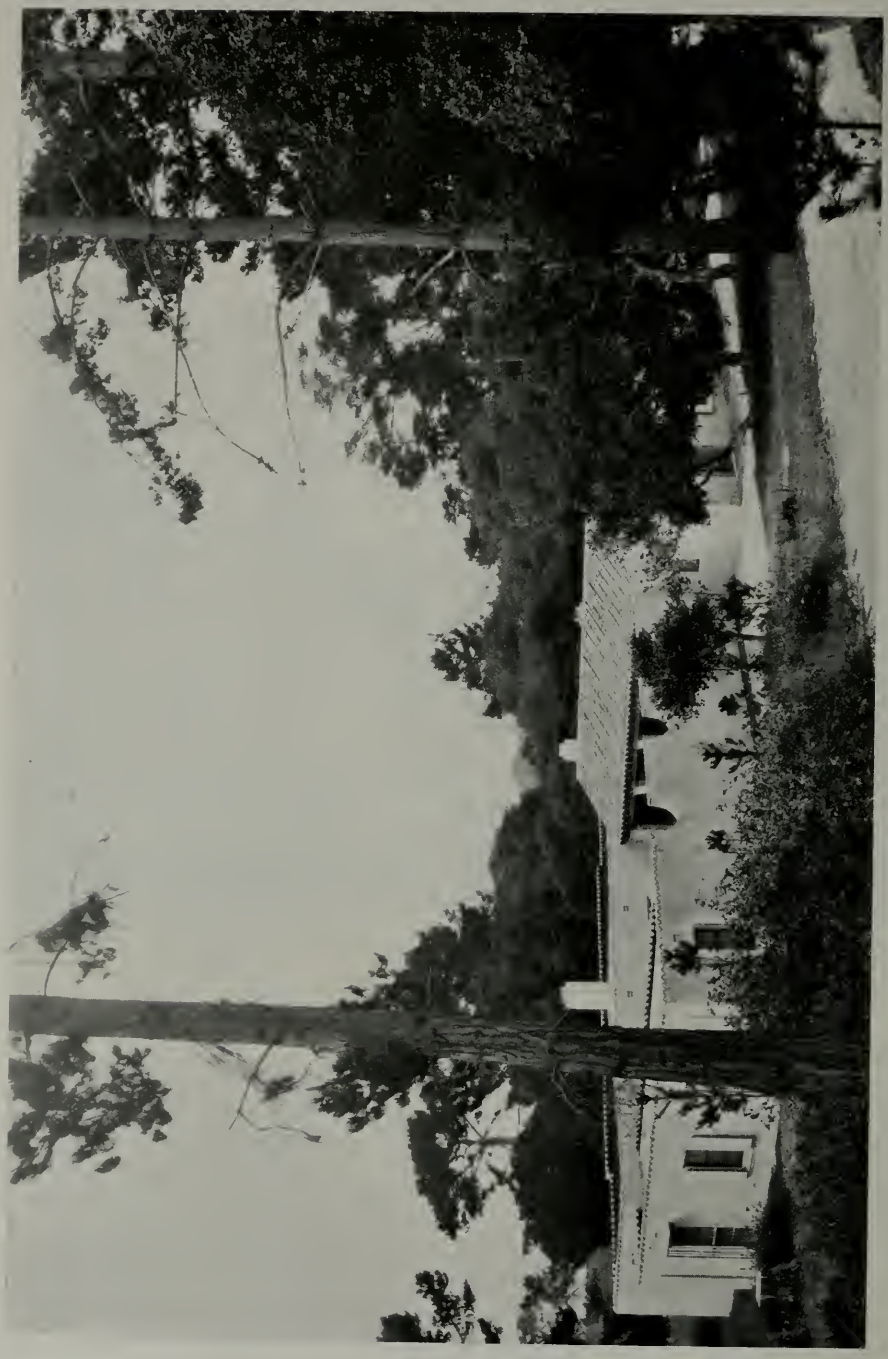
The composition is reminiscent of the abodes of Mexico. It reproduces their characteristic flatness and angularity, their engaging looseness of organization, their subtle, almost studious eccentricity of massing. It is the kind of thing which requires nerve and enthusiasm to undertake, and which would prove intolerable if it revealed either uncertainty of touch or flagging of spirit.

I hasten to add that it has been conspicuously well done. Its touches of uncouthness have obviously been the subject of the most careful study. The intention has been clear from the start, and has been realized. The whole office force must have derived a considerable "kick" out of working it up. And yet simplicity could go no further. Only the evident zest which went into the doing of it could keep it from baldness.

The exterior has been, I would not say sacrificed, but designedly subordinated to the interior. It is as if the whole structure grew from within in response to the promptings of a life which was from within; the exterior serves as only so much protective bark or shell. Certainly to saunter about patio and loggias and interiors is a genuine delight, a quiet delight which could not but be reinforced by the familiarity of daily life. Thus seen from the inside the elements of the plan are finely conceived and their organization is logical and full of interest. The prevailing breadth, spaciousness, generous scale, and extreme simplicity are peculiarly satisfying.

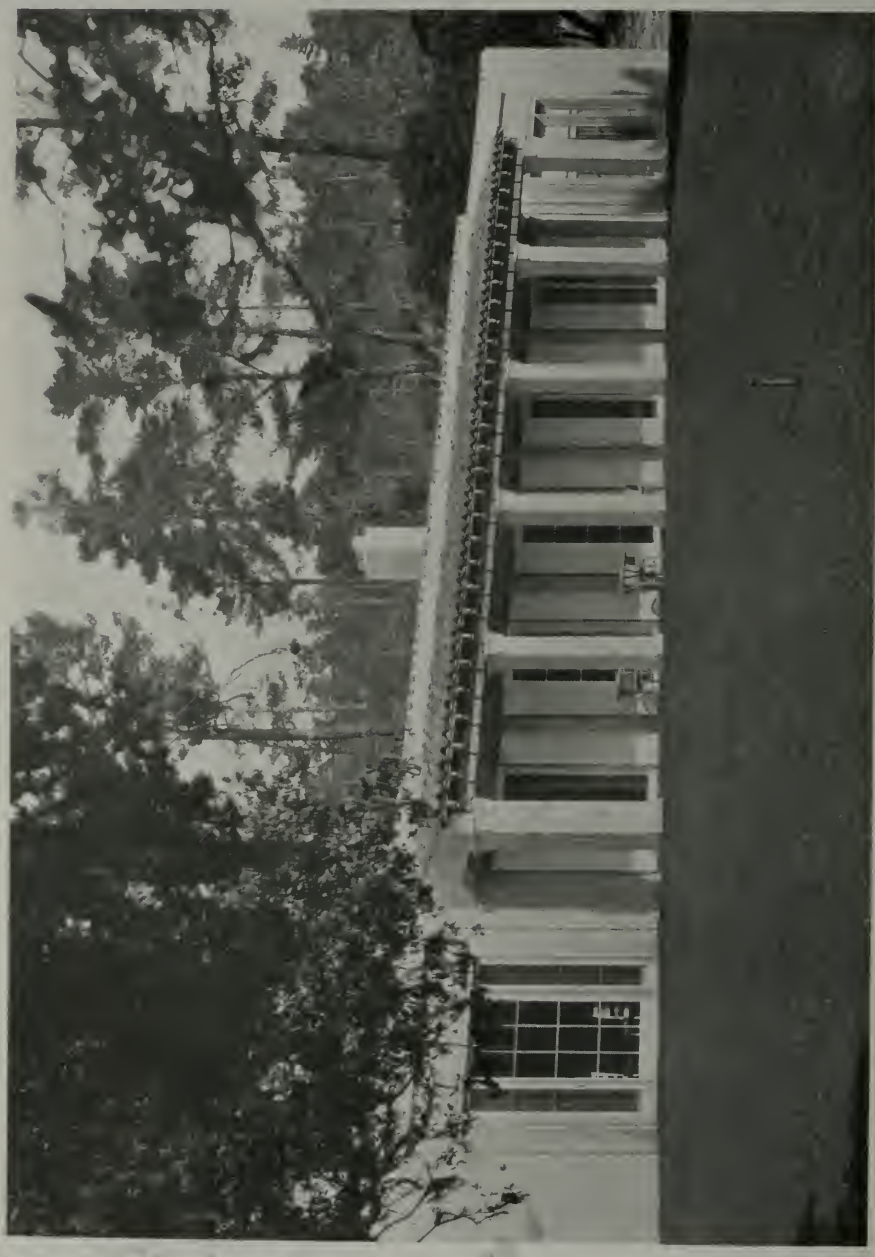
PATIO, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL.
Lewis P. Hobart, Architect

In finish the exterior walls are of pale pink plaster. In the patio loggia localized brilliant color has been used in the architectural details as well as in the cement pavement. The architecture of the interior is uniformly light gray, almost white, save for a plain verde-antique fireplace of the living room. The requisite life and color have been introduced in furnishings and hangings. The result is most emphatically human and civilized. Every unusual expedient or effect seems to have justified itself. I came away promising myself that I would never again use an unnecessary detail. Whether or not I actually do is of course beside the mark; I am merely testifying to the potent effect which so simple a building can weild when properly handled.



VIEW FROM ROAD, HOUSE FOR MR. JOHN S. CRAVENS,
PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

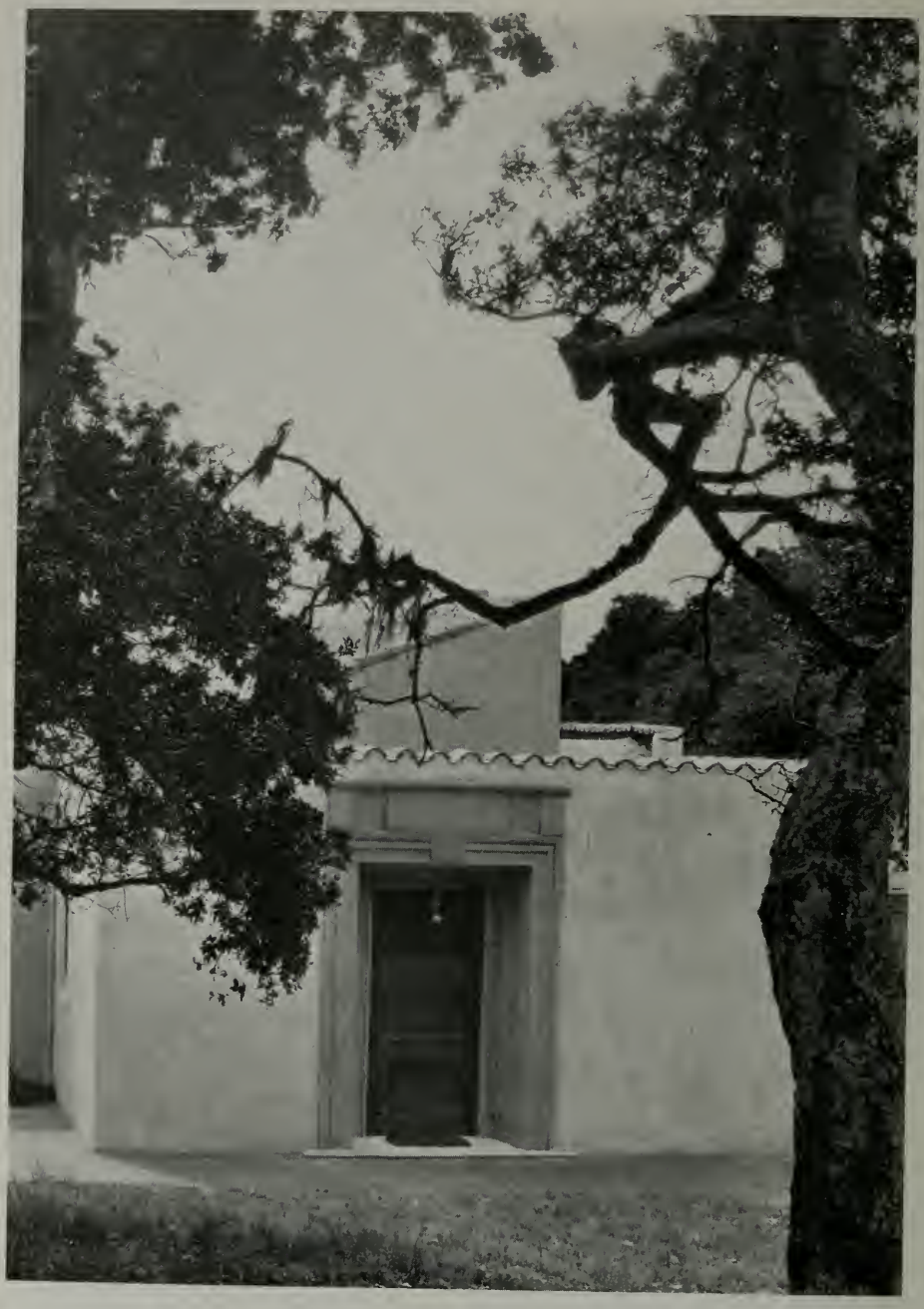
VIEW FROM GOLF LINKS, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT



LOGGIA ON GOLF LINKS, HOUSE FOR MR. JOHN S. CRAVENS.
PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

Lawton and Vezey, Builders.

HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

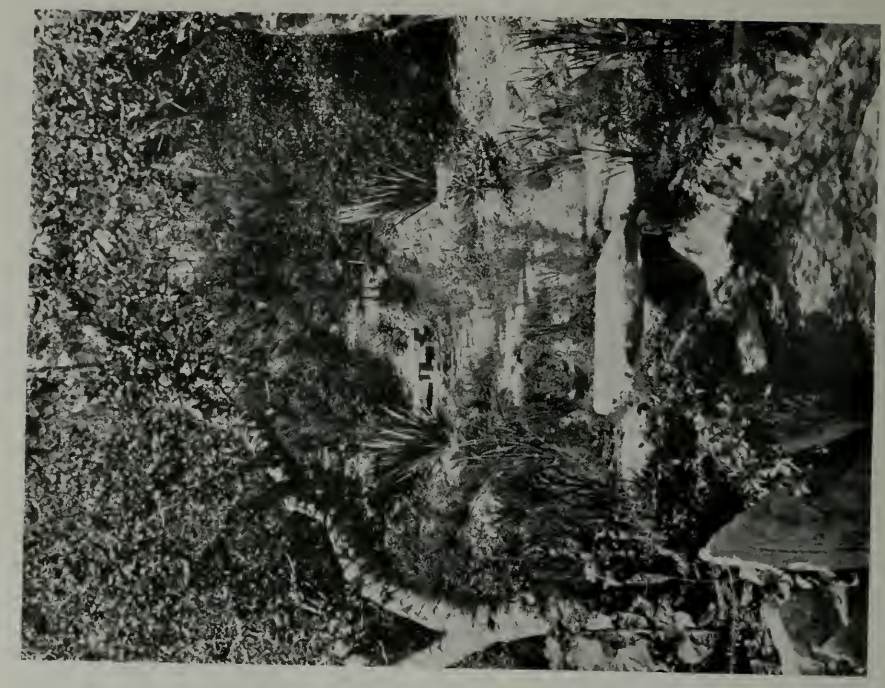


ENTRANCE, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

LOGGIA AND ENTRANCE, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

LOGGIA AND PATIO, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT

LIVING ROOM, HOUSE FOR MR. JOHN S. CRAVENS, PEBBLE BEACH, CAL. LEWIS P. HOBART, ARCHITECT



GARDEN, HOUSE FOR MR. E. H. COX, PEBBLE BEACH, CAL.

HOUSE FOR MR. E. H. COX, PEBBLE BEACH, CAL.
CHAS. F. COBBLEDICK, ARCHITECT

THE CLARK HOUSE

Of all the dwellings along the coast at Pebble Beach the most adventurous in location is that of Mr. C. W. Clark. It hangs on the very brink of one of the highest cliffs fronting the ocean, a rocky promontory jutting into the sea. Age old cypresses grapple and cling among the rocks above the water; behind, on the level table land on which the house is built, stand taller and lither pines, outposts of the forest which here meets the water's edge.

The site is picturesque and dramatic in the extreme. It might, on first

PLAN, HOUSE FOR MR. CHARLES W. CLARK, PEBBLE BEACH, CAL.
Bakewell & Brown, Architects

thought, have been held to demand a building of conspicuous vigor and unconventional roughness. A Gothic designer would have finished out these uncompleted crags with loftier and yet more shattered crags reaching into the sky. Messrs. Bakewell and Brown have adopted a diametrically opposed course of procedure. They have held to the general character of work with which they have in the past manifested the most evident sympathy. They have also appreciated, consciously or unconsciously, that there is something predominately horizontal in the genius of California. They have designed a building which rests along the top of the cliff rather than grows out of it. The composition is picturesquely organized, although made up of elements formal in themselves. The plainest plaster walls crown the broken

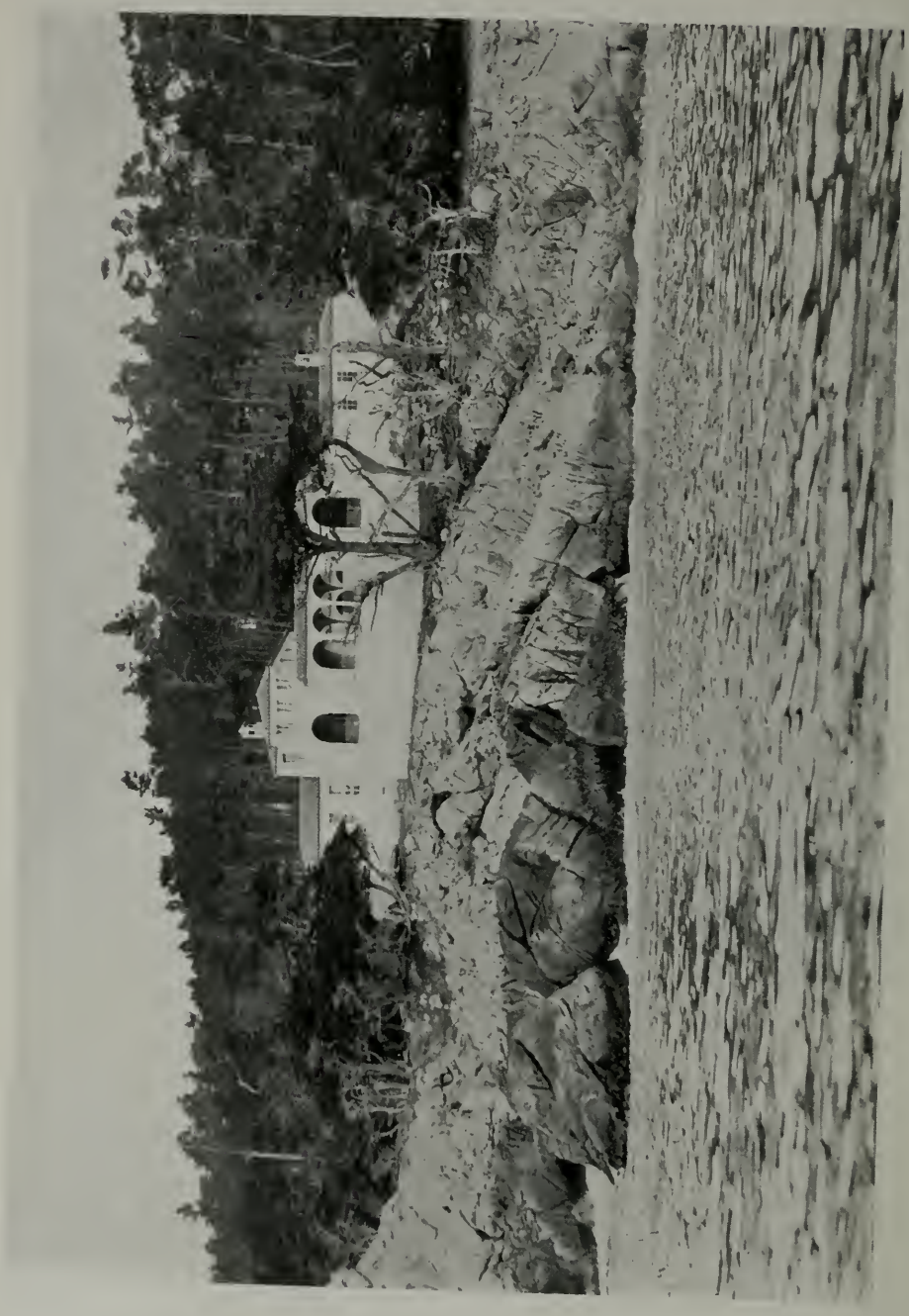
cliffs and slip quietly in among the contorted trees. Delicate Renaissance arcades look out over a restless and untamed sea. The grayish white walls and deep blue trim are cool and quiet against the yellower tones of the rocks.

The Italians have proceeded on a similar principle (albeit employing a different idiom) in dealing with the picturesque coasts of Amalfi and Sorrento. The result here has again justified the course followed. The carefully balanced contrast is fully satisfying. Even the rather refined medium of expression is in no wise inappropriate. The wild but not savage quality

ENTRANCE, HOUSE FOR MR. CHARLES W. CLARK, PEBBLE BEACH, CAL.
Bakewell & Brown, Architects

of the landscape finds itself enhanced by the conscious (but not self-conscious) fastidiousness of the building.

We are apt to think of California as eminently suited to architecture in the Spanish spirit and tradition—which, of course, it is. Yet it is interesting to note that two of the most successful and appropriate buildings around Pebble Beach—Del Monte Lodge and the Clark house—incline rather more toward the feeling found in certain Italian and French work. It only goes to show that composition and the informing spirit are the all-important things, and that the historical style label, before which many people are so humbly acquiescent, is a matter of little consequence save to the archeologist.



VIEW FROM OCEAN, HOUSE FOR MR. CHARLES W. CLARK,
PEBBLE BEACH, CAL. BAKEWELL & BROWN, ARCHITECTS

VIEW FROM ROAD, HOUSE FOR MR. CHARLES W. CLARK, PEBBLE BEACH, CAL. BAKEWELL & BROWN, ARCHITECTS

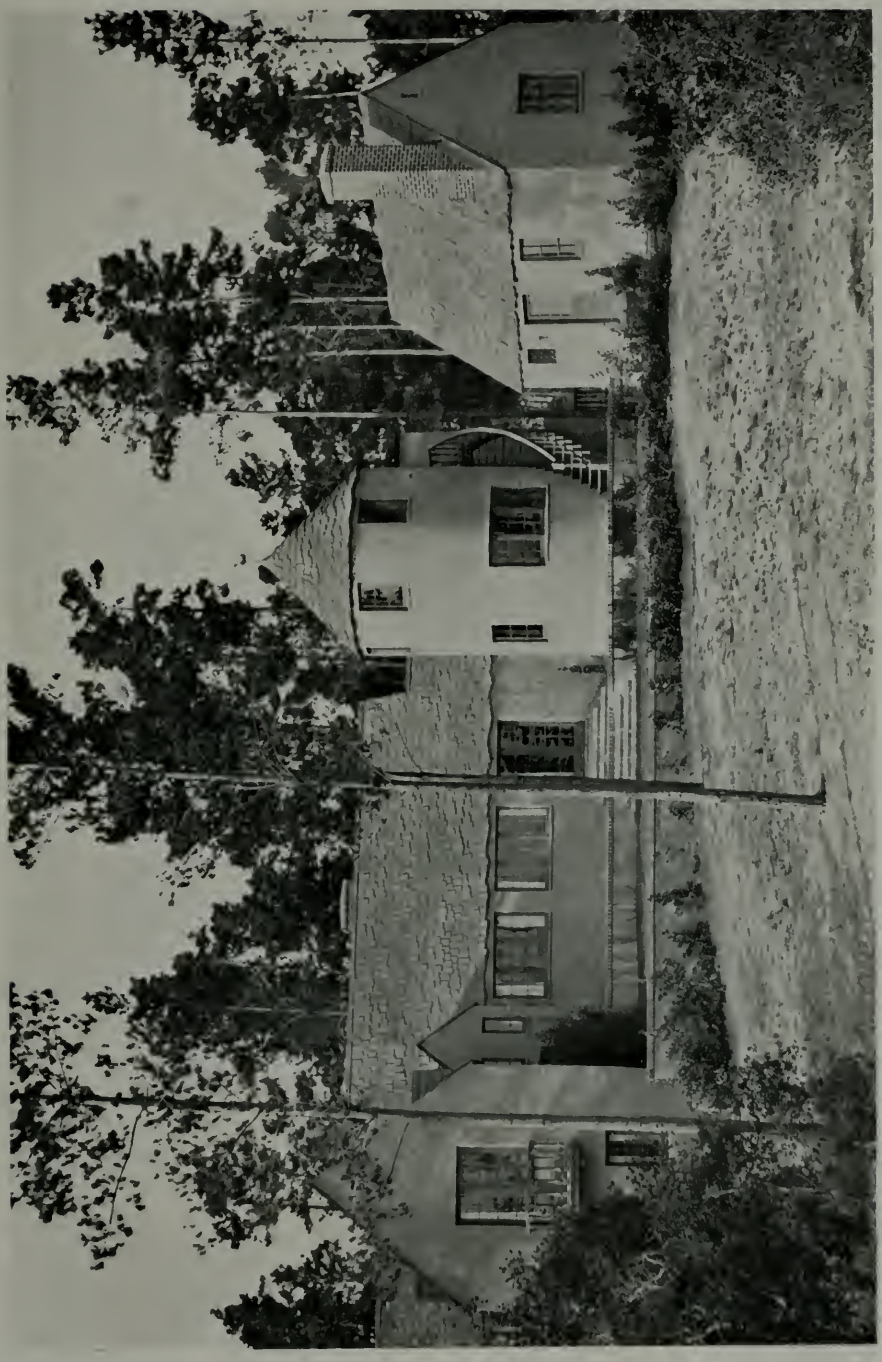
LOGGIA OVERLOOKING OCEAN, HOUSE FOR MR. CHARLES W. CLARK,
PEBBLE BEACH, CAL. BAKEWELL & BROWN, ARCHITECTS

HOUSE FOR MR. CHARLES W. CLARK, PEBBLE BEACH, CAL.
BAKEWELL & BROWN,
ARCHITECTS

LOGGIA OVERLOOKING OCEAN. HOUSE FOR MR. CHARLES W. CLARK, PEBBLE BEACH, CAL. BAKEWELL & BROWN, ARCHITECTS

HOUSE FOR MR. MARK DANIELS, PEBBLE BEACH, CAL.
MARK DANIELS, ARCHITECT

HOUSE FOR MRS. HARRIET C. MOORE, PEBBLE BEACH, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS



HOUSE FOR MRS. HARRIET C. MOORE, PEBBLE BEACH, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS

THE COOK HOUSE

When inclined to ratiocination I sometimes speculate on the extent to which one is warranted in laboriously assuming the characteristics of archaic handicraft in an age which employs only the machine and understands only its standards. As the man in the street is sometimes inclined to put it (with more than necessary crudity, to be sure), why go to a lot of trouble and expense to execute things poorly when you can get them well executed easily and cheaply? Far-reaching ethical and aesthetic questions are in-

PATIO AND ENTRANCE LOGGIA, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
Pierpont & Walter S. Davis, Architects

volved. But in the presence of a house such as Messrs. Pierpont and Walter S. Davis have designed for Mr. George Cook, such theoretical considerations are irrelevant; one can only enjoy and admire. Deliberate archaism such as one here finds is insufferable affectation when poorly done or only partly achieved. My conscience is not entirely easy on the matter when it——

But before I make this sound like a condemnation, I hasten to extricate myself from the entanglements of the abstract, and say that in the concrete I have found the Cook house one of the most beautiful and delightful of the Pebble Beach region—or for that matter, of its kind in northern California.

In common with the Cravens house not far distant, it lies on the edge of the golf course; it also has an enclosed patio, with entrance through a loggia along one side. Its general type is Spanish; not, however, the Mexican version, but that of Southern Spain which has been influenced by Moorish decoration. The exterior walls are orange in tone. Throughout the almost miniature paved patio and loggia there is a free use of polychrome tiles of

LOGGIA FROM ENTRANCE, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
Pierpont & Walter S. Davis, Architects

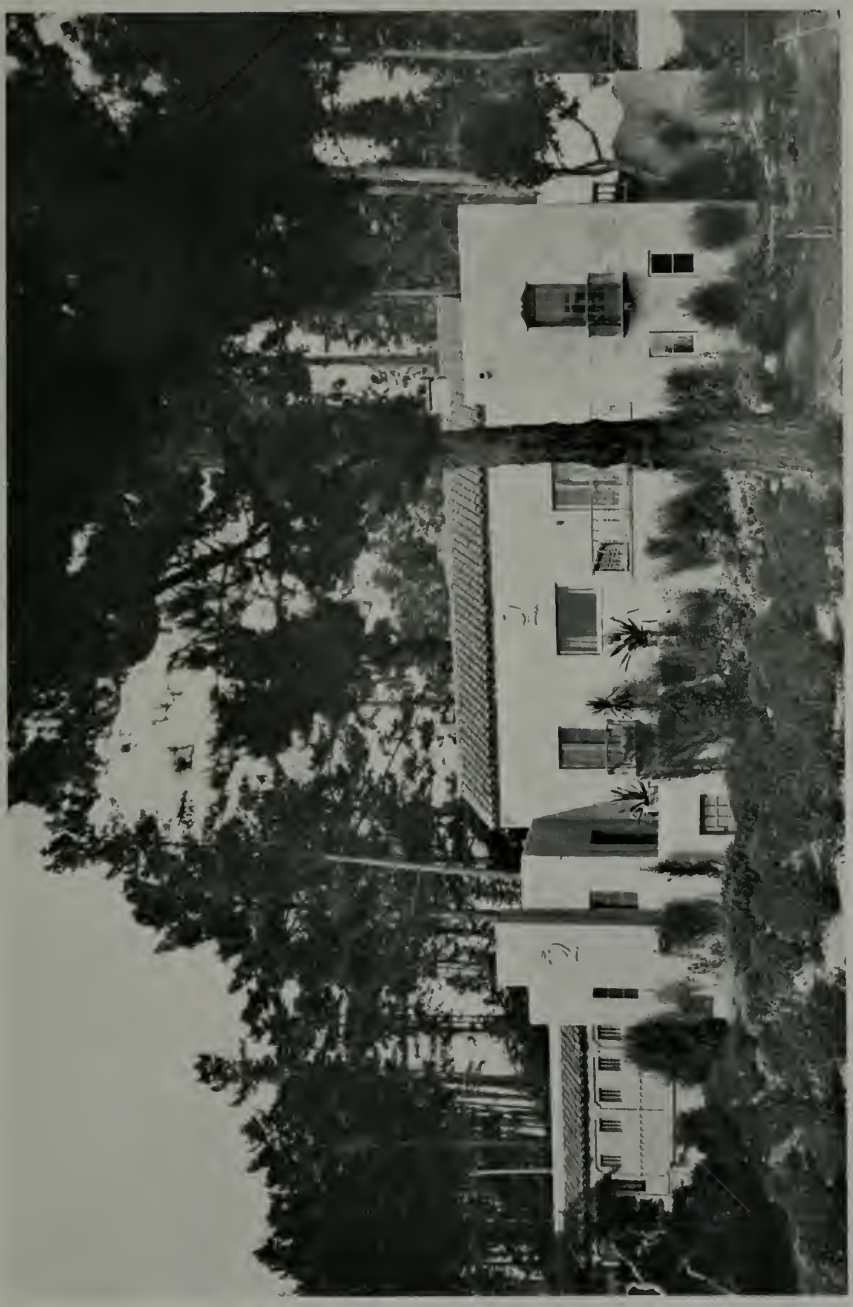
Moorish design. The interiors are particularly successful. The high living room with painted wood ceiling; the square groin vaulted dining room; the bed room barrel-vaulted with penetrations; the mellow harmonious color of every wall and floor and ceiling; the perfection of every detail—all of these things testify to unfailing care, not only in the study of drawings, but on the job during execution.

When I think back over this house, realizing its beauty and harmony and perfection of every part, I feel a tinge of guilty regret for the implied strictures with which I began the discussion—although my conscience forbids me to retract them.

VIEW FROM ROAD, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL. PIERPONT & WALTER S. DAVIS, ARCHITECTS

VIEW FROM ROAD, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL. PIERPONT & WALTER S. DAVIS, ARCHITECTS

VIEW FROM GOLF LINKS, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS



HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS

BED ROOM WING

HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
Pierpont & Walter S. Davis, Architects

LIVING ROOM

BED ROOM, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
Pierpont & Walter S. Davis, Architects

LIVING ROOM, HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS

HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
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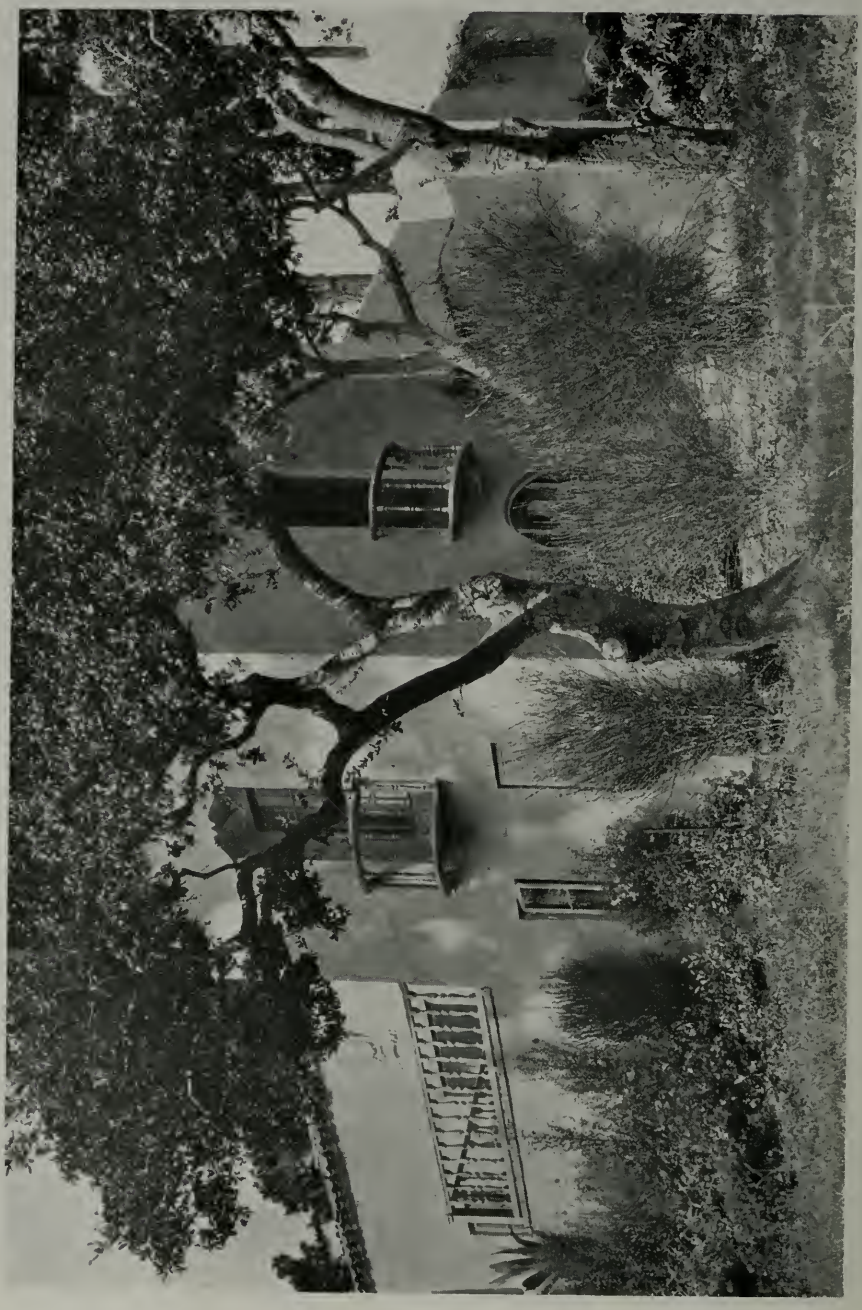
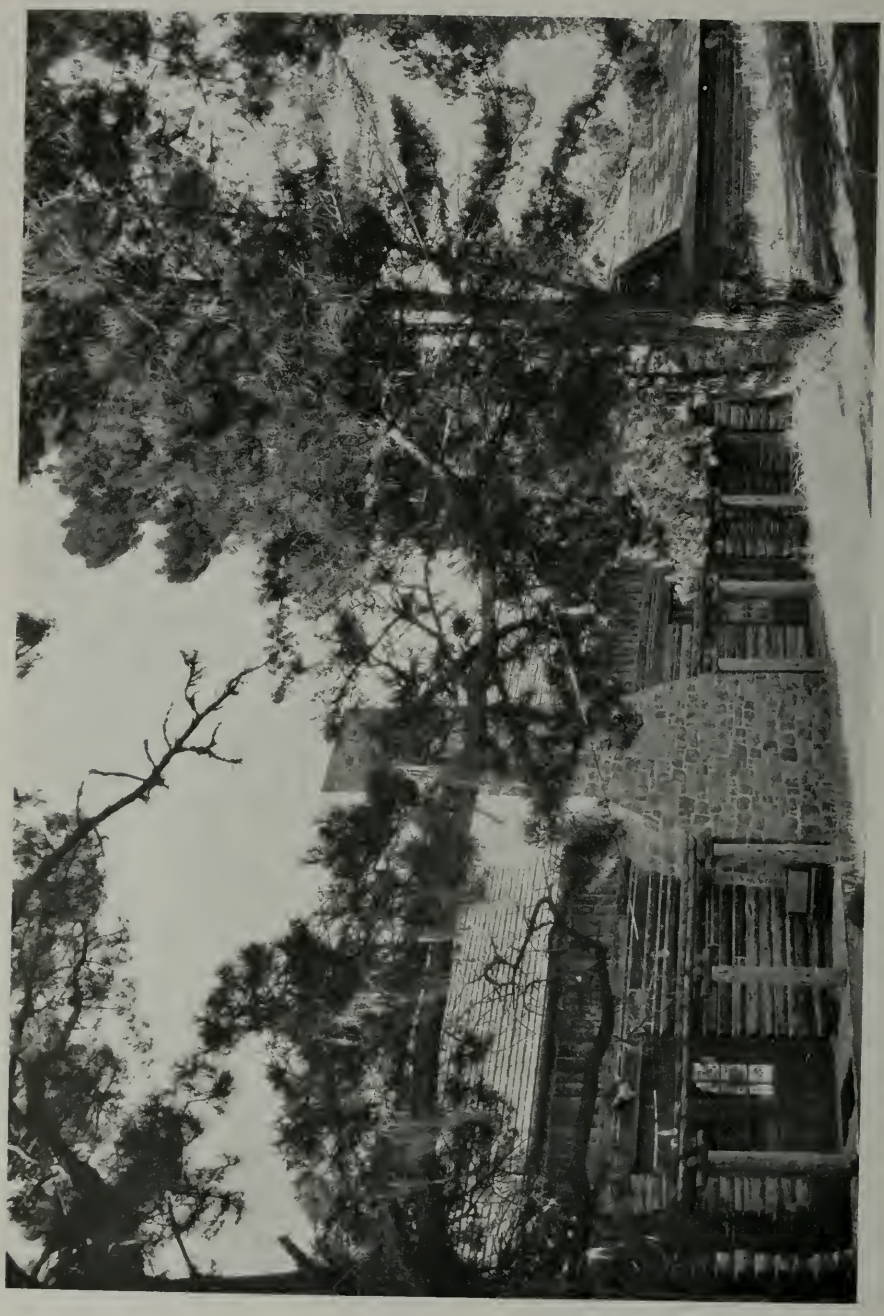


HOUSE FOR MR. GEORGE T. COOK, PEBBLE BEACH, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS

(The loggia and columns are treated in brilliant polychrome under the direction of Mark Daniels.)

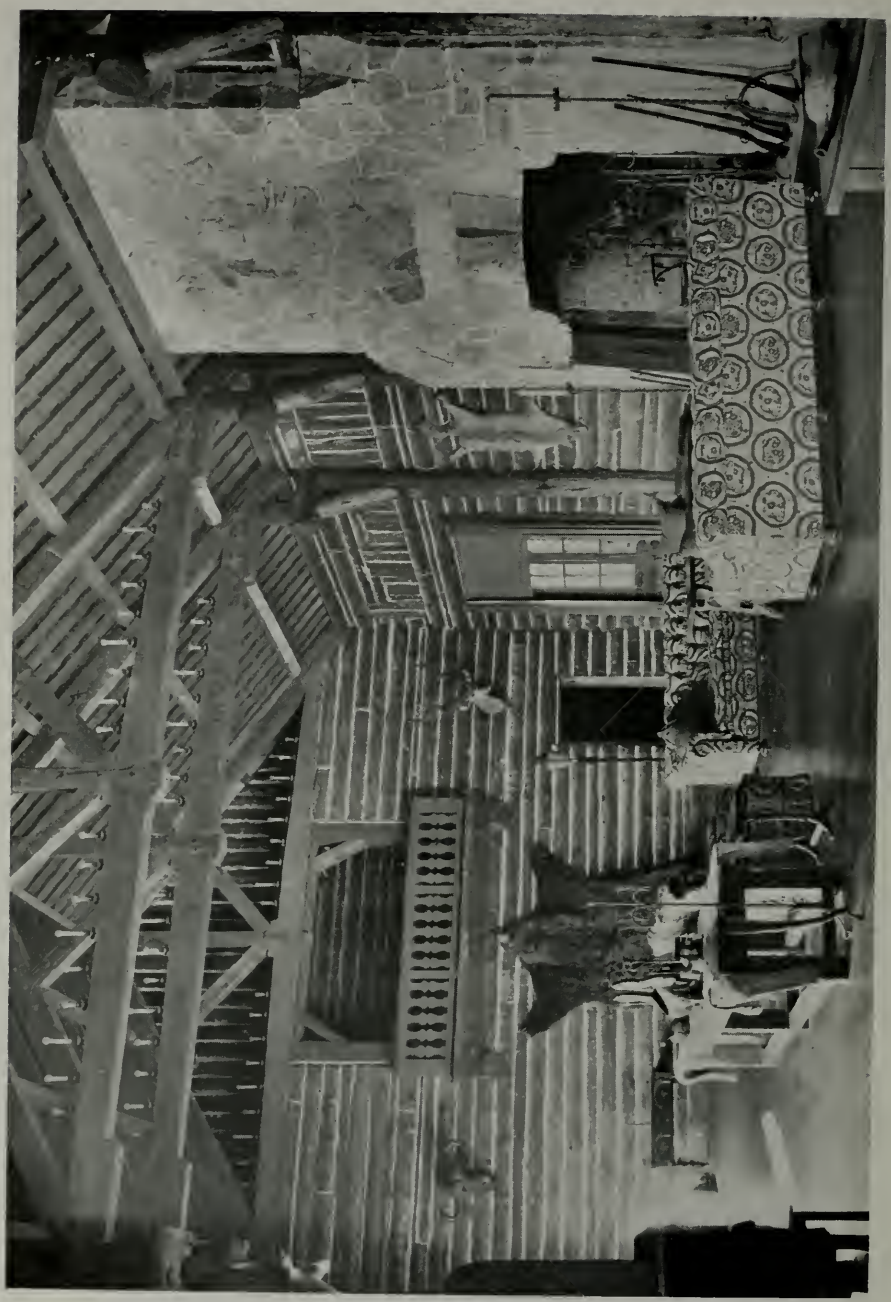
HOUSE FOR MR. S. W. FORSMAN, PEBBLE BEACH, CAL.
S. W. FORSMAN, ARCHITECT



HOUSE FOR MR. A. K. MACOMBER, PEBBLE BEACH, CAL.
LEWIS P. HOBART,
ARCHITECT

(This house is of genuine log construction)

HOUSE FOR MR. A. K. MACOMBER, PEBBLE BEACH, CAL.
LEWIS P. HOBART, ARCHITECT



LIVING ROOM, HOUSE FOR MR. A. K. MACOMBER, PEBBLE BEACH, CAL.
LEWIS P. HOBART, ARCHITECT

SAN CLEMENTE DAM, MONTEREY
J. A. Wilcox, C. E.

The San Clemente Dam

By C. S. OLMSTED

SAN CLEMENTE DAM is located about twenty-two miles southeast of Del Monte Hotel at the junction of the Carmel river and the San Clemente creek, from which creek it gets its name.

This is a constant angle single arch concrete dam and is known as the Jorgensen type. It was designed by Mr. J. A. Wilcox of San Francisco, and constructed by Chadwick & Sykes, Inc., also of San Francisco.

The dam is 105 feet high from bed rock to top of the parapet wall, and is 300 feet long on the up stream face. It will store seven hundred million gallons of water. Approximately 7070 cubic yards of 1-2½-5 concrete, to which was added 5 per cent of hydrated lime, was used in the construction. The spillway consists of twenty-four openings, six feet wide and twelve feet high. It is planned to later place gates at each opening so that the height of the water stored can be raised twelve feet. A concrete walk runs over the top of the spillway gates so that attendants may cross over the dam at all times to operate the control valves.

A modern fish ladder is being designed and will be constructed this winter in order that the regular run of steelhead may go up to the headwater to spawn, thereby perpetuating the excellent fishing for which the Carmel river is renowned.

San Clemente dam was built by the Del Monte Properties Company to store the winter run off of the Carmel river for use on the Monterey Peninsula. The people of this vicinity are now assured of an abundant supply of pure mountain water at all times as the storage provided is calculated to carry over any dry year that may happen.

THE
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BANKS BUILD THEMSELVES BUT REFUSE TO ENCOURAGE OTHERS

Banks are building notwithstanding the fact that some bankers still are saying that the "high cost of building" does not justify building loans. The Philadelphia Public Ledger, of September 25, has an interesting story on bank building now going on in that city. The American Contractor quotes from the article as follows:

Nearly a half million dollars has been invested by Philadelphia banking institutions in the erection of bank buildings during the last six months in all sections of the city. Several architects have plans in progress, too, for buildings of this class.

The Frankiln Trust Company tops the list with a twelve-story addition to its present building at 18 South Fifteenth street. This new building will cost, when completed, about $210,000, and a permit for its erection was issued May 3. The building will be of reinforced concrete and brick, and is being built by John N. Gill & Co. Plans were prepared by De Armond, Ashmead & Bickley, architects.

If building costs are so high that building loans are unwarranted then what about the bank policy which does not hesitate to build?

THE BUILDING SITUATION IMPROVING

Those who have made a study of the San Francisco building situation say that the cost of materials and labor now is within fifteen per cent of normal and they declare that construction work can be undertaken on a cost basis comparing favorably with the average cost basis of other activities. Contrary to predictions in some quarters, there is no evidence of a spectacular or important decrease of building cost in the immediate future, aside from the reductions already made. But there is evidence suggesting the possibility of higher construction cost next year.

Architects say that with a final settlement of the wage question present tendencies to delay construction work will be overcome. The belief in some quarters that there will be a further material reduction in the wages of the building trades is not likely to be realized, according to a well-known contractor who predicts that the work of the new wage board will be largely an equalization of the present wage scale. Each trade will be considered according to a scientific rating, it is said, and a man's skill and ability will figure very largely in the final adjustment of his wage, as will the hazard of his work.

LICENSES TO PRACTICE WITHOUT AN EXAMINATION

The state of Tennessee has a new license board that issues certificates to practice both to architects and engineers. In California the board's authority extends only to the architectural profession. How the combination will work out remains to be seen. Unlike the California law no examinations in any case are necessary, the conditions for securing a license being as follows:

First, that all architects and engineers resident in the state and in bona fide

practice of one of these professions at the time of the passage of the Act (April 9, 1921) who have had responsible charge of work, as principal, within this State will be granted a license.

Second—

(a) Corporate members of the principal national architect and engineering technical societies;

(b) Graduates in architecture or engineering with four years' course of study and four years' experience thereafter;

(c) Architects and engineers not qualified under the above provisions but who have had ten years' experience;

(d) Persons holding a license in other states with as high a standard as Tennessee will be licensed without examination.

The fee for license is $25.00; annual renewal fee, $5.00.

The members of the Board of Examiners, appointed by the Governor, are:

Engineers: Dr. Charles S. Brown, Vanderbilt University, Nashville; Prof. N. W. Dougherty, University of Tennessee, Knoxville; A. L. Dabney, Memphis. Architects: Bayard S. Cairns, Memphis; Henry C. Hibbs, Nashville; W. H. Sears, Chattanooga.

THE "STEPPED-BACK" BUILDING

It surely takes time to do things and generally, longer to correct the mistakes made in doing them. It was in 1883 that the first word was uttered suggesting tall buildings, skeleton construction, non-bearing walls, and the wise ones chortled sagely and averred, with forty-seven valid reasons, it couldn't be done. It did take some years before skyscrapers were really common, but they came and are here and more are being added, so there you are.

But, especially in New York with its narrow streets, the tall building against another tall building and opposite several others was not an unmixed blessing. The streets were becoming deep canyons, dark and unhealthy.

Fifteen years ago I suggested a remedy for this evil, the "stepping back" of the building line as one built upward, ever widening the street as it were, allowing sunlight to percolate to the lower stories. The Architect and Engineer was one of the three building Journals that published that suggestion then and advocated it afterward, albeit it, too, was pronounced visionary, unfeasable, impracticable, by a great many "authorities." No journal or paper in New York had anything good to say for it, it was knocked right merrily for several years. Only a few years ago did those journals and the authorities realize that something had to be done and that that suggestion was the best cure for the evil. We kept merrily on hammering at the subject, everlastingly pounding at the authorities and something over a year ago it was made a law in New York City and swallowed by the builders as bad medicine.

The Cunard Building is one of the first completed under the new regulations and I submit that it is a sightly pile, that it accomplishes what we were after and that it fully compensates the owners, making up in charm, health of occupants, advantage to streets and to the public and surrounding buildings, for what little loss of rental space there may be in the upper stories.

Seeing that building for the first time the other day suggested to me that its completion, the enforcement of that law in New York—and it will soon be incorporated in the other cities where streets are narrow and buildings are inclined to be tall—was a fit occasion for The Architect and Engineer to do a bit of crowing over an accomplished task in which it played so important a part. One more accomplishment added to the many there are or should be to its credit.

F. W. FITZPATRICK.

Santa Fe Building Addition

Two stories will be added to the twelve-story Santa Fe office building at Second and Market streets, San Francisco. The West Coast Life Insurance Company are the owners. Architects Weeks & Day have been commissioned to prepare the plans and Messrs. MacDonald & Kahn will be in charge of construction. The addition will cost $150,000.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Will Build Homes

A home in the French Renaissance is being designed by Architect Samuel L. Hyman of San Francisco for Mr. Samuel Pauson, of Pauson & Co., 200 Kearny street, San Francisco. The house will be erected at the corner of Jackson and Pierce streets, at an estimated cost of $80,000. It will contain 22 rooms and a feature will be the terrace work and landscape gardening. Construction will start in December.

Other San Francisco business men who are having homes designed by Mr. Hyman are Mr. Samuel Baer, who will build a $20,000 house at Commonwealth and Euclid streets; Mr. Martin Rosenbladt, a $20,000 home in 27th avenue, Sea Cliff; Mr. Walter G. Hyman, a $25,000 country house at Hillsborough; Mr. Hugo Abrahamson, a $30,000 house at Hillsborough, and Mr. L. B. Feigenbaum, a $30,000 country place at Walnut Creek, Contra Costa county. Construction of all of these homes will start this winter or early in the spring.

Durant Assembling Plant

Construction of a $750,000 assembling plant for the Durant Motor Company in Oakland is announced by Mr. H .J. Brunnier, consulting engineer, Sharon building, San Francisco. According to Mr. Brunnier, there will be two buildings, the larger of which will be 700 feet by 700 feet and used as a factory. A smaller building will contain the executive offices of the company. Reinforced concrete will be used with a red brick trim, steel sash throughout and automatic fire sprinklers. Construction of the plant will be in charge of the P. J. Walker Company of San Francisco.

Packing Company to Build

The California Packing Corporation, whose headqaurters are 101 California street, San Francisco, will proceed at once with the construction of its proposed new factory and warehouse at Sacramento. A contract has been awarded to the Lindgren Company of San Francisco for approximately one million dollars. The plans have been prepared by the company's engineer, Mr. Phillip Bush.

Large Apartment Houses

Plans have been completed in the office of Architect Joseph L. Stewart, Claus Spreckels building, San Francisco, for two large apartment houses for Mr. Thomas McDougall. The larger of the two will occupy a marine view lot, 137x137½, at Francisco and Larkin streets, San Francisco. Estimates already received from contractors indicate that the improvement will cost $400,000. The proposed building will be seven stories. There will be six apartments to a floor having from four to six rooms to an apartment with servant's quarters in the basement.

The second apartment house which Mr. McDougall will build will be on Octavia street and will cost $150,000. It will be eight stories high.

The same owner is having plans prepared by Mr. Stewart for a three-story reinforced concrete commercial garage on California street, near Kearny, San Francisco, to cost $75,000. The building will provide accomodations for 150 machines.

Berkeley Store Buildings

Architect James W. Plachek of Berkeley has prepared plans for a large store building to be erected on Shattuck avenue, between Bancroft Way and Durant street, for Mr. W. W. Whitecotton of the Whitecotton Hotel. There will be thirteen stores and the building is being designed to carry additional floors when business conditions warrant. Mr. Plachek has also prepared plans for a market building at Shattuck avenue and Allston Way, to cost $40,000, and a store and office building at San Pablo avenue and Bristol street, West Berkeley, for Mr. Walter Mork, to cost $20,000.

California Palace

Construction has started on the California Palace Legion of Honor Building, which Mrs. A. B. Spreckels is to donate to the city of San Francisco in memory of those who fought in France in the world war. The building will be a replica of a famous French palace and has been designed by Architect G. A. Applegarth. A contract for its construction has been awarded to R. McLeran & Company for $500,000.

Passing of Two California Architects

Two well known California architects passed away during the last month and their deaths will be a distinct loss to the communities in which they lived and practiced their profession.

On October 20, Mr. James F. Dunn died at the St. Francis hospital in San Francisco, after an illness of less than one month. Mr. Dunn has practiced architecture in San Francisco for fifteen years and at one time was a member of the firm of Dunn and Kearns which designed a number of large apartment houses of a distinct type of architecture. One of these buildings—the Alhambra apartments, at 860 Geary street is designed in the Spanish style and has been very fully illustrated in building journals throughout the United States.

Only a year or so ago Mr. Dunn wrote for The Architect and Engineer an interesting article on modern apartment house construction. At the time of his death he was preparing plans for three large apartment houses. His unfinished work will be taken up and completed by Mr. Albert Schroepfer. Mr. Dunn was a member of San Francisco chapter A. I. A., and the Union League Club.

In the death of Mr. A. J. Bryan of Chico, Butte county, on October 10th, The Architect and Engineer lost one of its oldest readers, Mr. Bryan having been a continuous subscriber to this magazine since its first number in 1905. Mr. Bryan's death was due to paralysis following an illness that extended over a period of nearly a year. He was 73 years old. Many of the pioneer business blocks and private dwellings in Butte county were designed by Mr. Bryan. He is survived by a widow, two daughters and a son, the latter, Mr. E. E. Bryan being associated with the Shasta Lumber Company of Marysville.

Sixteen Story Bank Building

Among the big projects which are announced to go forward the first of the year is the construction of a sixteen-story Class "A" addition to the Oakland Bank of Savings Building on Broadway. The new structure will be built on the bank's property adjoining its present building. There is a three-story structure now on the site and this will be razed to make room for the skyscraper. Working drawings are being prepared in the office of Architects Reed & Corlett.

To Complete Hebrew Home

The Trustees of the Hebrew Home for Aged Disabled have instructed Architect Sam Lightner Hyman to award contracts for the completion of the Hebrew Home now under construction at Mission street and Silver avenue, San Francisco, at a cost of $750,000. Construction of this building was started less than a year ago.

Oakland Theatres

Two new theatres are assured Oakland for next year with possibilities that there will be a third one. The Orpheum is to construct a million dollar playhouse on upper Broadway from plans by Architect G. A. Lansburgh and the William Fox Theatrical Interests have commissioned Messrs. Weeks & Day, San Francisco architects, and Maury I. Diggs, of Oakland, to prepare plans for a $600,000 motion picture theatre to be built at Broadway and 21st street. There is a possibility that the Famous Players Corporation will erect a theatre in the vicinity of 19th street and Broadway.

Two Apartment Houses

Plans for a large apartment house at Grand avenue and State street, Oakland, are being prepared by Architect James T. Narbett of Oakland and Richmond. This building will be three stories and will contain fifteen apartments of four rooms each. The owner is Mr. Dorch and the estimated cost is $60,000. The same architect has completed plans for an apartment house to be built on Lakeshore avenue, Oakland, for Mr. Joseph Senaia, and construction will start within a week.

$80,000 Apartment House

Architect W. E. Schirmer is preparing drawings for a four-story reinforced concrete store and apartment building for a Berkeley client and which will be erected on Shattuck avenue in the business section of that city. The plans provide for six stores and thirty-six apartments. The owner will spend close to $100,000 on the improvements.

Gas Company Buildings

The Pacific Gas & Electric Company is having plans prepared by Architect C. W. Dickey for an eight-story steel and concrete office building to be erected at the corner of 17th and Clay streets, Oakland, at a cost of $200,000 . The gas company will also build a large warehouse in Oakland from plans by William Knowles, the architect.

Garages for Oakland

There is considerable activity in automobile sales buildings and garage construction in Oakland. Plans for two buildings of this type on upper Broadway, are being prepared by Engineer R. Vane Woods, who has also made plans for a garage and repair shop to be built at Fourth street and Broadway.

Oakland Loft Building

Architects Reed & Corlett have awarded a contract to Lawton & Vezey to build a two-story reinforced concrete loft building and warehouse at 3d street and Broadway, Oakland, for the Tillman & Bendel Company of San Francisco, for approximately $50,000.

O'Brien Bros. Busy

Architects O'Brien Bros. have completed plans and awarded a contract for a four-story and basement Class "B" reinforced concrete loft building 25x75 feet, to be constructed on First street, south of Mission, San Francisco, for Mr. Luke Fay.

The same architects have completed plans for a two-story and basement reinforced concrete loft building on Howard street, 275 feet east of Second, for Mr. Louis R. Lurie. The first floor has been leased to the Shields-Harper Company and the second floor to the Intertype Corporation. The building will cost $40,000.

Mr. Lurie will also build a one-story and mezzanine reinforced concrete store and office building on the south line of Howard street, 200 feet west of First, for the Hampton Electric Company, lessees.

Plans are being prepared by the same architects for a one-story and basement reinforced concrete commercial garage, 67x137x6, for Mr. R. W. Kern, of the Fairmont Garage. The building has been designed to carry an additional story later on. The estimated cost is $40,000.

Steinhart Aquarium

Architect Lewis P. Hobart of San Francisco has completed drawings for the Steinhart Aquarium to be built in Golden Gate Park at a cost of $250,000. The structure will be a unique acquisition to San Francisco's amusement places and will be one of the largest acquariums in the world. The building will be constructed of reinforced concrete and of classic design. The fish will be exhibited in sixty or more glass tanks of varying sizes. The largest tank or "swamp," as it is specified in the architect's plan, will be 35x60 feet and 3 feet deep.

Designs Many Schools

Architect Theo. C. Kistner, Central Mortgage building, San Diego, reports that he has prepared plans during the year of the following school buildings, all of which are under construction with the the exception of the Balboa Park Junior high school, the Coronado high school and the high school addition at Ocean side:

Grammar School, Bonsall, Calif.....	$18,000
Grammar School, El Cajon, Calif.....	36,500
Capistrano Union High, San Juan Capistrano	53,000
Grossmont Union High, Grossmont, Cal.	136,000
Grammar School, Oceanside, Calif.....	34,000
High School (addition), Oceanside, Cal.	17,000
Sweetwater Union High, National City, Cal.	165,000
Logan Heights Jr. High, San Diego, Cal.	300,000
Balboa Park Jr. High, San Diego, Cal..	300,000
Coronado High, Coronado, Calif.....	120,000
	$1,179,500

Test of Concrete Balcony

Eighty-three and a half tons of cement in sacks were piled on the reinforced concrete cantilever balcony in the new First Christian Church building at Long Beach and the deflection was negligible. This test was made by the city building department. A live load equal to that carried in the test cannot possibly be squeezed into the gallery. The new dome is constructed of wood and copper, supported by steel arches, and rests upon four heavy steel columns. The main auditorium of the church will seat 2500.

Store and Office Buildings

Plans have been completed in the office of Maury I. Diggs for a two-story concrete store and office building for Mr. Stuart S. Hawley on 15th street, near Franklin, Oakland. Mr. Diggs expects to let a contract shortly for a large one-story brick store building at Durant and Telegraph avenues, Berkeley, for Mr. Frank J. Woodward. The estimated cost is $60,000.

Seven-Story Building

A seven-story and basement reinforced concrete commercial building is to be erected on Montgomery street, between Bush and Sutter streets, San Francisco, from plans being prepared in the office of Architect Sam L. Hyman. The exterior of the building will be of polychrome terra cotta.

Trees for State Highways

Professor J. W. Gregg of the University of California and Consulting Landscape Architect for the State Highway Commission and State Forestry Commission, has recently completed a detailed survey of the State Highway in Yolo county, with a view to a systematic campaign for highway treeplanting in that county.

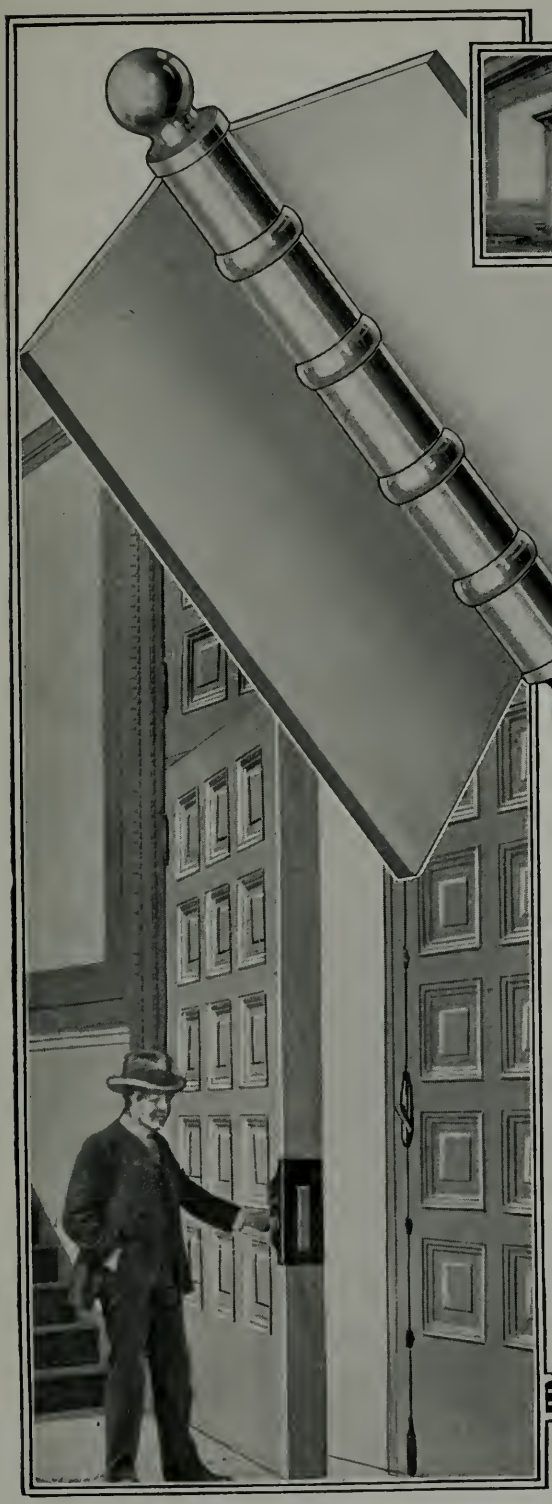
The State Forestry nursery near Davis is now beginning to furnish ornamental trees for such highway planting in limited quantities, and a start will be made this fall in Yolo county.

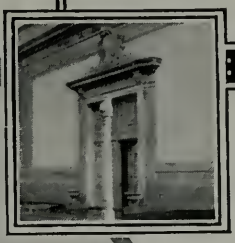
Certificates to Practice

Certificates to practice architecture have been granted by the California state board of architecture, Southern Division, to Mr. Edw. L. Taylor, architect, of Edwin Bergstrom's office, and to Mr. Clifford A. Truesdell, Jr., 345 San Fernando Building, Los Angeles.

Opens Branch Office

Architect W. Asa Hudson, who has been practicing at Santa Monica with offices at 1105 Sixth street, has opened a branch office at Beverly Drive and Burton Way, Beverly Hills. Mr. Hudson has a number of good commissions on the boards.





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85 Acres For New Industries

Rincon Hill will add 15 city blocks or 85 acres to the level area of San Francisco for industrial sites, loft and light manufacturing purposes. Owing to its strategic position between the waterfront, rail facilities and the city's banking and mercantile centers, the razing of this hill will add enormously to the value of the city's productive capacity.

The estimated cost of the work is $4,000,000 and the time it will require to complete it is two years. The plan for financing it calls for graduated district assessments.

Architect Frederick H. Meyer, chairman of the Rincon Hill Committee of the San Francisco Chamber of Commerce, in an article prepared for the chamber, after reciting briefly the history of the movement to level Rincon Hill says:

"The interest of the chamber in promoting the removal of the hill has been prompted by the broadest community welfare. The central object kept in mind has been the maximum industrial growth of San Francisco.

"The question has been asked, What is an ideal industrial district? We must first assume that the industry to be located in such a district will be of average size and not large enough to have all of the necessary facilities required by the concern self-contained. With this in mind, an ideal industrial district would be:

"(1) Where the streets are practically level; (2) unlimited spur track facilities; (3) good street car transportation; (4) close to the hotel and financial district; (5) if a seaport town, close to the waterfront; (6) have solid foundations, avoiding piling; (7) well paved streets; (8) street lighting, fire protection and other modern facilities.

"Anyone even casually acquainted with Rincon Hill and its location, can judge how nearly this area meets ideal requirements.

"The Supervisors, in committee, have approved the project and presented the whole matter to the board for consideration.

"The project has been approved virtually by every commercial organization in San Francisco, and its realization will be a forward community accomplishment."

Masonic Temple

The Masonic Orders of Oakland are planning the erection of a $750,000 temple on their property on 14th street between Alice and Jackson streets. The site is 302x220 feet. It is proposed to construct a building of from six to ten stories in height.

$100,000 Country Home

Plans are being prepared in the office of Architects Bakewell & Brown of San Francisco, for a $100,000 country home to be built near the polo fields at Hillsborough, San Mateo county, for Mr. George G. Moore. The Spanish type of architecture will be followed.

Oakland Apartments

Architect Clarence Tantau of San Francisco has made plans for an apartment house to be built on the northwest corner of Wesley avenue and Lake street, Oakland, for Messrs. H. R. & N. N. Hewelcke. It will cost $27,000.

Result of Architectural Competition

Architects Pierpont and Walter S. Davis of Los Angeles won the competition for selection of an architect for the new St. John's Episcopal church in the Southern city. The new edifice will be a replica of the famous St. Bartholomew's church in New York City. It is designed in Romanesque architecture and will be built of reinforced concrete and terra cotta.

Six architects were invited to participate in the competition—Messrs. Allison & Allison, Robert D. Farquhar, Lyman Farwell, Reginald Johnson, Pierpont and Walter S. Davis. Mr. Farwell, who was absent from the city for a considerable period, did not participate.

The competition was conducted under the rules of the American Institute of Architects, Mr. Edwin Bergstrom, president of Southern California Chapter, serving as the professional adviser. The jury of award consisted of Mr. Ernest Coxhead, San Francisco; Mr. William Templeton Johnson, San Diego, and Dr. Geo. Davidson, rector of St. John's church.

Personal

Architect A. H. McCulloh has moved his office from Walnut Park to 1131 N. Western avenue, Los Angeles.

Architect Clifford A. Truesdell, Jr., has reopened offices at 305-6-7 San Fernando building, Los Angeles, and desires catalogs and samples of building materials.

Architect W. L. Woollett has moved his office from 215 Wright-Callender building to 1211 Pacific Mutual building, Los Angeles.

Architects Wyckoff & White of Salinas have opened an office in the Growers Bank building, San Jose.

Mr. Elwin P. Norberg announces the opening of an office for the practice of architecture, at 6403 Hollywood boulevard, Los Angeles. Mr. Norberg is a graduate of the Massachusetts Institute of Technology and was formerly in the office of Mr. John Parkinson. Manufacturers' samples and catalogs are requested.

Given Certificates to Practice

The State Board of Architecture, Southern Division, has granted certificates for the practice of architecture to the following: W. Douglas Lee, with Architect John M. Cooper; William J. Gage, 4239 Monroe street; Ray J. Kiefer, 218 Wilshire building, 6th street and Western avenue; H. H. Whiteley, 520 S. Western avenue; Harry T. Miller, with Architect R. C. Farrell; and Lowell A. Lamoreaux, 1492 W 46th street.

LOGGIA AND PATIO OF MR. JOHN S. CRAVEN'S RESIDENCE, PEBBLE BEACH, CALIF.
LEWIS P. HOBART, Architect LAWTON & VEZEY, Builders

Contractors also for the following homes at Pebble Beach, all illustrated elsewhere in this issue.

W. W. CROCKER, WILLIS POLK, *Architect*
C. F. DILLMAN, L. P. HOBART, *Architect*
F. J. ROGERS, L. P. HOBART, *Architect*

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306 PLAZA BUILDING
OAKLAND

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

The Relationship Between Architect and Engineer

PROBABLY no subject has brought forth more diversified discussion and dissension for a period as far back as we can remember, as the question of the architect and the engineer and their relationship in designing and constructing buildings. Does the engineers' work extend further than structural and mechanical designing? Is he competent to handle the architectural treatment of a building? and on the other hand, should an architect undertake to design the engineering features of a building? And should the architect confine his pursuits strictly to buildings, leaving the design of bridges, dams, stadiums, etc., to the engineer? Some very pronounced difference of opinion in answering these interrogations developed when the question of building a stadium for the University of Washington, Seattle, was discussed and the Associated Engineering Societies of Seattle addressed a communication to the Board of Regents of the University asserting that a stadium was essentially a problem of engineering rather than of architecture. Mr. Chas. H. Bebb, a member of the architectural firm of Bebb and Gould, Seattle, took exception to the claim of the engineers and his statement may serve as an answer of the architect to the engineer in future disputes of similar nature. Mr. Bebb's remarks, quoted in part, follow:

The communication addressed by the Council of the Associated Engineering Societies of Seattle to the Board of Regents, University of Washington, in regard to the Washington Field Stadium now being constructed on the campus of the State University, brings up again the perennial question of the relationship between the architect and the engineer.

Purely from the altruistic standpoint if we correctly construe the set of resolutions as submitted to their final analysis the Associated Engineering Societies of Seattle, in the fear that the stadium may be built under the direct supervision of architects and upon the theory that such a building should be primarily the work of the engineer, while admitting the necessity of collaboration with the architect, somebody to throw in here and there a veneer to cover up the hard bones of the skeleton frame as it were, feel constrained to point out to the Board of Regents and public officials charged with the responsibility of public works their duty to properly distinguish between what works should be assigned to the architect and what to the engineer.

The logical basis of reasoning from the engineer's standpoint can only be that the physical properties of the building are more vitally the prime factors than the purposes and conception of the building as a whole. That the expert knowledge of the bearing values of the soil, the properties of reinforced concrete, the strength of columns, girders and joists, etc., are the primary points to be considered, and that the planning and design are secondary considerations requiring reluctantly the collaboration of the architect. This argument would hold good, were it a fact, for every kind and class of building erected by human hands from the mighty Woolworth building in New York to the simplest structure erected in space, for in none can we neglect at least a modicum of engineering knowledge.

It is possible, of course, the Associated Engineering Societies might admit in the matter of buildings that the position of the architect should predominate. But when it comes to a stadium the resolution sets forth, "Whereas a structure of the type and for the purposes here contemplated is essentially and predominantly an engineering structure and its architectural features a secondary consideration," and upon this hypothesis the Associated Engineering Societies consider the architect is only a mere adjunct. In other words in the thought of HOW the structure should be built all consideration of WHY is lost sight of.

The word stadium, without intending to be pedantic or wander in the realms of archaeology, or the history of religions, takes the mind far back into ancient Greek history. We find the stadium was the outgrowth of great religious festivals. In the remote days the tribes residing in adjoining territories, the amphictyon or neighbors around, finding they were worshipping the same God agreed under certain conditions to hold at stated intervals of time a festival in honor of their great deity. From this conception arose the temple of Zeus at Olympia on the banks of the river Alpheus in the plains of Elis. To all the tribes of Greece Zeus was the pre-eminent aboriginal Hellenic high God, the All Father, the Father of Gods and men in an intellectual and moral sense, omnipotent in heaven and earth, the sea and the realms below, a god of righteousness, justice and mercy, who regards the sanctity of the oath and in whom the pious and lowly trust. So every four years beginning at a date set at 776 B. C., until the meetings were abolished by decree of the Emperor Theodosius in A. D. 393, the representatives of the tribes and a great concourse of people convened at the Temple of Zeus for worship and religious festival. At first beyond ritual and religious rites and sacrifice the exercises consisted of oratory and music and competitions in paeans of praise by bards and poets exalting the attributes of the Great God. But in days so remote that time has left no record of their beginning we find that games were introduced in honor of the God at these festivals, and the principle of ancient Greek religion found expression that, "Ye shall worship not alone by the exaltation of the mind, but by the exaltation of the body."

In like manner arose the Temple of the Pythian Apollo at Delphi. Apollo was the young athlete god, the god of healing, music and lyric poetry, discipline and order. Beginning from the year 527 B. C., the Delphic Amphictyony met once every four years to worship with mind and body the collective attributes embodied in the god Apollo. So followed the Nemean and Ithmian religious festivals, celebrated every two

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years. These four festivals were the great religious gatherings of the Greek people, and while we of this day refer to them as the four great games, it is well to bear in mind that they were in the beginning undertaken in a serious, devotional spirit to honor a God.

If, in passing, for one moment we pause to consider the place in history of the Greek people and search the mien between fulsome panegyric and captious depreciation it is doubtful at this day and era whether even-handed justice has been accorded Greek achievement. Our art in architecture and sculpture, in literature, poetry and drama in logic philosophy and science, have their foundation in Greek antiquity. Truth and beauty, words synonymous rising to the surface on the stream of knowledge, floating down to us fed from the rivulets of by-gone ages. So when the thought of building a stadium is advanced at this date, the mind of the architect naturally harks back to the times when these buildings first came into existence, and the reasons why. We doubt whether it is so with the mind of the engineer.

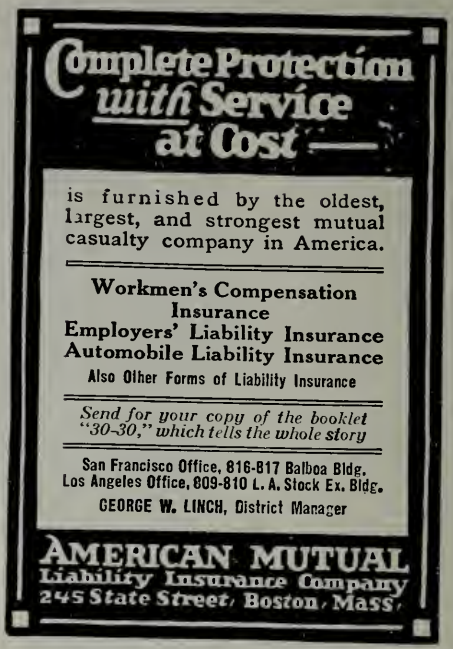
The stadium lends itself to manifold functions. In it, besides football, will be held track and field sports, pageants, open air plays, community song festivals, concerts, reunions, commencement exercises, military drills and gatherings of student bodies. Never for a moment may the designer, the architect, overlook or forget these points, and withal the building must in point of design and treatment be tied in with the entire scheme of the university as a whole and single unit. It cannot be treated as a mindless monotony of reinforced concrete benches, the structural integrity of which shall receive the so-to-speak hall mark of endorsement of the Council of the Associated Engineering Societies of Seattle. And acknowledging stability as a vital factor in its construction we cannot agree that a stadium is "a structure of the type and for the purposes here contemplated essentially and predominantly an engineering structure and its architectural features a secondary consideration."

Considering the building from the standpoint of its individual requirements, while we may be wrong, it being human to err, we believe the architect by reason of training and experience is more competent successfully to plan it than the engineer, that having in view the purposes of the building he will give better consideration to the seating and sight lines, circulation and methods of ingress and egress, drainage and comfort stations and all other desiderati pertinent to the structure.

It is in the question of design, we presume, that the Associated Engineering Societies admit the necessity of collaboration between architect and engineer, and we admit it also. But which shall predominate and which subordinate. In the completed building we shall look for unity, symmetry, proportion, the harmonic relation of parts to the whole and these are thoughts not consonant with the education and training of the engineer and again we doubt the hypothesis upon which the Associated Engineering Societies have based their resolutions, namely, that a stadium "is essentially and predominantly an engineering structure and its architectural features a secondary consideration."

If we look for precedent and seek the authors, or creators of other stadiums that have arisen in this country in the past years we find that the Harvard Stadium is credited to the architectural firm of Messrs. McKim, Mead & White; the Princeton Stadium to Mr. H. J. Hardenberg; the Chicago Stadium to Messrs. Holabird & Roche, the University of Chicago Stadium to Messrs. Coolidge & Hodgdon, all of them architects; (and the University of California Stadium to Mr. John Galen Howard, distinguished San Francisco architect).

The final paragraph of the resolutions offered by the Associated Engineering Societies disclaims that anything of a personal nature is intended. This is, of course, as it should be. In an undertaking so important as the building of this stadium personalities are as inconsequential as the drops of the last patter of rain on Puget Sound. It is somewhat extraordinary, however, that in all the publicity that has been given this matter, the repeated publication of the plans of the birdseye view of the proposed building, the Council of the Associated Engineering Societies has failed to observe that the name of a well known engineer has always been associated with the names of the architects.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Death of Howard C. Holmes

Mr. Howard Carleton Holmes, 67, civil and consulting engineer of national reputation, builder of the Ferry building and most of the early cable railways of San Francisco, died at his home, 2584 Filbert street, San Francisco, October 30th, after an illness of several weeks.

Mr. Holmes was stricken at his desk early in September. He was removed to his home where his condition for a time showed marked improvement.

Besides constructing the Ferry building, Mr. Holmes was responsible for the development of Lake Chabot, Oakland's principal source of water supply; the Alameda mole, the Key Route ferry system mole, a greater part of the old Oakland, Alameda and Piedmont railroad and the yacht harbor and freight and passenger terminals at the 1915 Panama - Pacific International Exposition and the Hunter's Point drydocks.

Mr. Holmes' actual accomplishments extend the length of the Pacific coast, while his reputation is known to engineers in all parts of the United States. He is the former consulting engineer of the Massachusetts harbor and land commission, the Esquimale Shipbuilding and Dry Dock Company in British Columbia, the port of Portland dock commission, the Bethlehem Shipbuilding Company, the Western Pacific Railroad and most of the larger corporations having terminal facilities in San Francisco harbor.

Engineer For Surveyor General

An engineer for the position of surveyor general of California is demanded by the American Association of Engineers. At a meeting of Los Angeles Chapter of the association President Carl Heinze read a resolution adopted by the board of directors opposing the appointment of a surveyor general for California who was not a competent engineer. He outlined the action taken by the board of directors with reference to the matter and advised the membership that a copy of the resolution had been mailed to each of the California senators. "The Los Angeles Chapter is not behind any individual, and it does not propose to back any candidate; the only interest we have in the matter is to see an engineer surveyor general of California. It is an engineering position and should be filled by an engineer who has had considerable experience in mine and land surveys," said President Heinze.

County Engineer Law Invalid

The law providing for appointment of county engineers, enacted in 1919, known as the Reams law, has been declared invalid by the California supreme court. This law was designed to give counties an opportunity to secure the services of engineers of ability and experience which is not always possible under the law providing for the election of county surveyors because the candidates for this office must be residents of the county in which they are elected and the salaries fixed are not attractive to engineers of training and high skill, particularly in highway construction. Broad powers were vested in the county engineer by the Reams law which placed all highway and bridge construction and maintenance under his direction. This made him virtually an executive officer in whom were centralized the powers delegated under the old law to the supervisors who were given control of the road and bridge work in their respective districts.

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PLANT AT LAKE MAJELLA

The Monterey White Sands

By A. J. GUNNELL

THE white sand beaches and dunes of the ocean front of the Monterey Peninsula were perhaps as interesting to the discoverers of Monterey Bay and to Father Serra and his followers, as to the thousands who have wandered over them in more recent years. Artists have painted and photographed them so faithfully that their beauties are familiar to people of many lands; they constantly shift, recede and grow, by action of wind and wave, ever presenting new charms to the artist and nature lover.

Opposing currents of titanic force meet on the face of the peninsula and their action on the boulders and ledges of the ocean floor produces the beautiful white sands dashed up by the waves onto the beaches and shaped by the winds into the wonderful dunes.

Aside from their artistic charm these sand deposits have utilitarian values which have been so developed since their pioneer uses for plastering and engine sands, as to have become one of the principal operations of the Del Monte Properties Company, warranting installation of mechanical equipment which, with the minimum of man power loads, washes, dries and prepares the sand for commercial shipment.

Sand is loaded from two deposits; that at Fan Shell Beach, a great beach of a coarse grained sand lying between the Seal Rocks and the point where the Old Ostrich Tree stood, as one approaches Cypress Point. Here a dragline carries the sand from beach to storage bins alongside the drive, which discharge to trucks transporting the sand seven miles to main plant on track at Lake Majella. The other deposit is at Lake Majella, the terminus of the Monterey branch of the Southern Pacific Company. Here the Del Monte white sand is hauled by dragline from the dunes, and both sands are loaded to railroad cars in crude state as they come from the deposit, or after having been washed and dried.

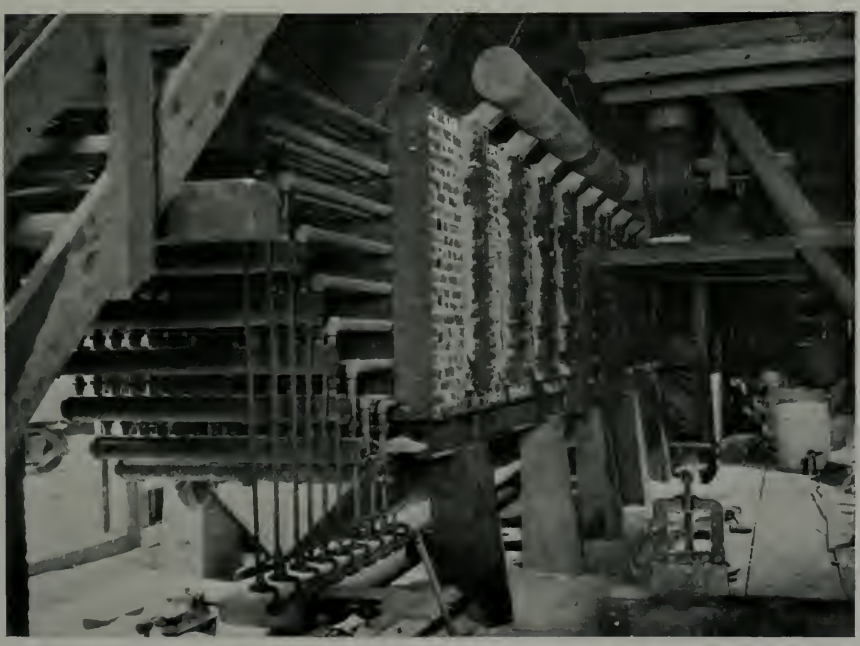
At Lake Majella is located the washing and drying plant which was completed and began operation February 1, 1921. This plant is equipped to handle both sands, washing in fresh water, draining, drying by steam, and is the most approved type of plant used in Pennsylvania and West Virginia for treating the silica sands produced in those states for the glass industry.

Sand is discharged from dragline or truck into a bin from which, fresh water jets playing upon it, it is fed into a double revolving screen which eliminates most of the impurities; thence it goes to batteries of logwashers, the process of traveling from bottom to top of log, down over

LOADING TRACK, LAKE MAJELLA

LOG WASHERS

DRAINAGE ROOM



STEAM DRYER

FAN SHELL BEACH

riffles to bottom of next log, and so on, constantly under action of water, until discharged to conveyor, completes a thorough washing and the sand is ready for the drainage room to which it next proceeds. On the drainage floors the water which follows the sand from the time it enters the plant is mostly lost. In damp state it is discharged to a belt conveyor running under the bottom of drainage floors, which delivers it to a conveyor in the drying room, running to and along top of the thirty-five foot steam dryer.

This dryer is a great battery of steam pipes returning waste steam and condensation to boilers; into this battery of pipes the sand is tripped from conveyor and working down as it dries, discharges bone dry into a triangular bin at bottom of and full length of dryer. From this bin it falls through small circular openings to a belt conveyor delivering to a bucket elevator running to top of storage house, there discharging through a final revolving screen to chutes leading to various storage bins. From storage bins sand is loaded direct to paper lined box cars, or goes to sacking room where sacks are filled, closed and sewed by machine, and then loaded to cars.

These sands, largely used industrially, are valuable for their high silica content, very small percentage of iron, sharpness of grain and freedom from silt, and are in especial demand since they can be supplied thoroughly cleaned, washed and dried, in all seasons. They are used for making glass, for foundry cores, facings and castings, for sand blasting, roofing, plasters, stuccoes, mortars, artificial stone work, filtration, golf courses and many other purposes—not the least of which is for children's playground sand boxes, municipal and private. The territory to which they are shipped covers California, Oregon and Washington—the entire Pacific Coast from San Diego to Vancouver and Victoria—and the Hawaiian Islands.

Constant experimentation and research is prosecuted in efforts to completely eliminate any impurities which would interfere with the use of the sands for specific purposes. Mother nature co-operates in maintaining the supply — the waves work incessantly and the winds are no slackers—and as the dunes gradually rebuild as they are worked down and the beaches renew themselves each season, it is safe to say that the deposits of Del Monte and Fan Shell Beach white sand are inexhaustible and will be available as long as the Pacific beats and caresses the coast of California.

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UNIT SAFETY SWITCH

Los Angeles Not Ready to Endorse San Francisco Wage Scale

The wage question came up for discussion at the regular meeting of Southern California Chapter, Associated General Contractors of America, October 27, on a request from the Builders' Exchange of San Francisco for endorsement of the proposed new wage scale for building trades in San Francisco, to become effective on the expiration of the present agreement. On a recent visit of President Gompertz of the San Francisco exchange, to the Los Angeles Chapter, a committee was appointed at his suggestion to confer with a committee of the San Francisco organization on the matter of a uniform wage scale. In view of the fact that the matter of readjustment of wages in Los Angeles is still under consideration by the joint committee of the Chapter, the Los Angeles Builders' Exchange and Merchants and Manufacturers' Association, no conference with the San Francisco committee has been held. It was decided by the Chapter that under the circumstances no endorsement could be given at the present time to the proposed new San Francisco scale. Discussion developed that there are widely varying conditions which must be taken into account in determining wages in some lines and for this reason the practicability of a uniform scale for the coast is in doubt.

A Wild Guess

An advertisement purporting to come from the "W. D. Anderson Company" of San Bernardino, saying that city is in need of 5000 to 10,000 bricklayers, plasterers and carpenters was published recently in the New York World. Mr. Anderson, a well driller and contractor at San Bernardino, denies any knowledge of the advertisement and moreover says he has all the employes he needs. The perpetrator of the hoax may have been inspired by a desire to start a migration of unemployed from the east, but he made a wild guess when he picked out San Bernardino as the objective for five to ten thousand men seeking jobs.—Southwest Contractor and Builder.

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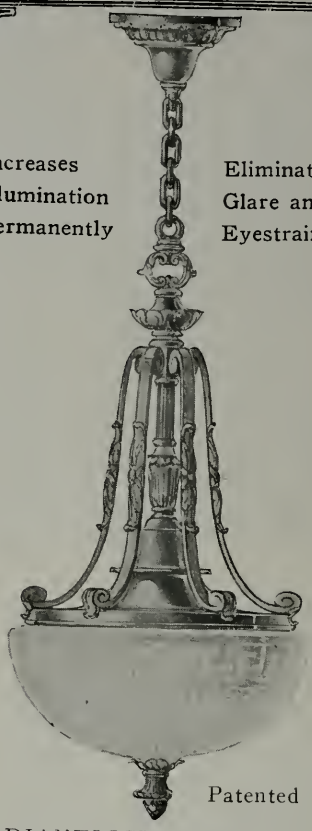

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(Required by the Act of Congress of August 24, 1912),

Of The Architect and Engineer, published monthly at San Francisco, California, for October 1st, 1921.

State of California,
City and County of San Francisco.—ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the Manager and Publisher of The Architect and Engineer, Inc., and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher.....W. J. L. Kierulff
627 Foxcroft Bldg., San Francisco
Editor .....F. W. Jones
627 Foxcroft Bldg., San Francisco
Business Manager .....W. J. L. Kierulff

2. That the owners are: W. J. L. Kierulff, 627 Foxcroft Bldg., San Francisco; F. W. Jones, 627 Foxcroft Bldg., San Francisco; L. B. Penhorwood, 627 Foxcroft Bldg., San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in said stock, bonds, or other securities than as so stated by him.

W. J. L. Kierulff, Manager.

Sworn to and subscribed before me this 26th day of September, 1921.

[SEAL] . Nettie Hamilton,
Notary Public in and for the City and County of San Francisco, State of California.
(My commission expires February 15, 1925.)

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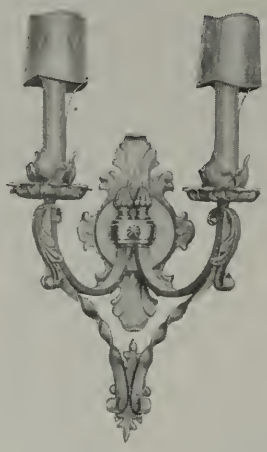

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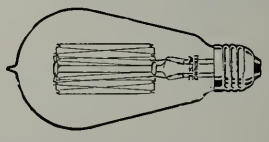

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Construction—Key to Unemployment

IN a letter addressed to Mr. W. O. Winston, president of the Associated General Contractors of America, Secretary Herbert Hoover, at the close of the session of the Unemployment Conference, declared construction to be the key to the present situation. For, as shown at the conference, every 200 men employed in actual construction sets to work from 500 to 700 men in other basic industries, such as lumber, cement, transportation, mining, manufacturing, etc. Mr. Hoover's letter follows in full:

The President's Conference on Unemployment
Department of Commerce
Washington

October 13, 1921.

Mr. W. O. Winston, President,
Associated General Contractors of America,
801 Globe Building,
Minneapolis, Minn.

Dear Mr. Winston:

You have doubtless noted the emphasis placed on construction by the President's Unemployment Conference as a means of relief for the present unemployment.

As I am advised that you and several of your executive board are about to make an extended trip in the interest of the construction industry, I express the hope that you will lay before the several communities you visit the importance of getting under way at once the construction program outlined, which is felt to be the key to the present situation.

Yours faithfully,
(Signed) HERBERT HOOVER.

To start this program, meetings of representative citizens and general contractors have been held in the principal cities of the country to discuss ways and means of getting it under way. Messrs. W. O. Winston of Minneapolis, president of the Associated General Contractors of America, W. A. Rogers of Chicago, F. L. Cranford and D. A. Garber of New York, together with G. W. Buchholz, secretary, and E. J. Harding, assistant secretary of the national organization, have been addressing the meetings in behalf of an aggressive program, both national and local, to start construction.

That this construction program, cannot be gotten under way without the organized effort of community and construction interests, is the message carried by these leaders. While the construction of homes, schools, buildings, highways, streets, railroads, public works and repairs of all kinds, reclamation projects and hydro-electric development, as urged by the National Conference on Unemployment, will undoubtedly directly set to work a million men who will in turn give work to millions more, there is needed first a thorough-going analysis of present construction costs in every city, including costs of finance, insurance and bonds, materials, labor, transportation and management. Moreover, there must be adequate provision for settling questions in dispute without the great loss of time caused by strikes and lockouts; and there must be sincere cooperation between organizations representing every element of the construction industry.

The organization of local conference boards representing architects, engineers, contractors and labor to handle local jurisdictional disputes and other local construction problems is recommended. Local committees will be urged to secure the fall letting of public work and highway contracts. Other committees to secure adequate legislation for highway and water-power development will be recommended. Investigations in better methods of accounting and estimating and improved contract forms will be suggested.

The following cities have been "covered" during the past 30 days with results that will very shortly become apparent it is believed:

Minneapolis, Minn., Monday, October 17.
Des Moines, Iowa, Wednesday, October 19.
Omaha, Nebr., Thursday, October 20.
Denver, Colo., Friday, October 21.
Salt Lake City, Utah, Monday, October 24.
Spokane, Wash., Thursday, October 27.
Seattle, Wash., Monday, October 31.
Portland, Ore., Tuesday, November 1.
San Francisco, Friday, November 4.
Los Angeles, Monday, November 7.
El Paso, Tex., Thursday, November 10.
Dallas, Tex., Friday, November 11.
Oklahoma City, Monday, November 14.
Kansas City, Tuesday, November 15.
St. Louis, Mo., Wednesday, November 16.

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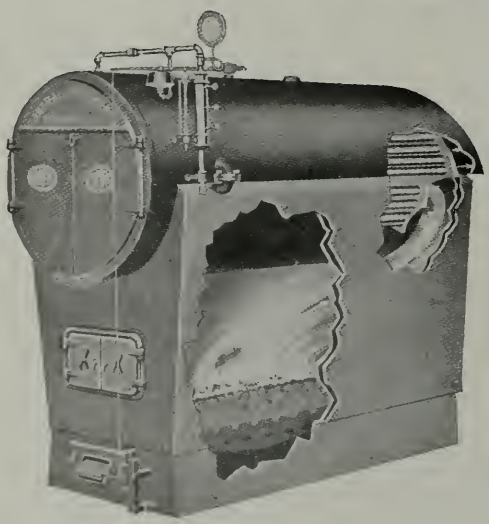

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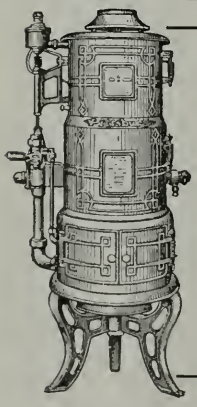

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All prices f. o. b. cars San Francisco or Oakland. For country work add freight and cartage to prices given.

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Electric Wiring—$7.00 to $11.00 per outlet for conduit work (including switches).
Knob and tube average $3.25 to $6.00 per outlet.
WAGE—Electricians, $9.25 per day.

Elevators—
Prices vary according to capacity speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $4,200; direct automatic, about $3,700.

Excavation—
$1.55 per yard, if sand.
Teams, $10.00 per day.
Trucks, $21 to $30 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 20c per square foot.
Plate, $1.20 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 41c per square foot.
Obscure glass, 28c per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $7.85 per day.

Heating—
Average, $2.00 per sq. ft. of radiation, according to conditions.
WAGE—Steamfitters, $9.25 per day.

Iron—
Cost of ornamental iron, cast iron, etc., depends on design.
WAGE—Iron workers, bridge and structural, $8.35 per day.
Architectural iron workers, $7.40 per day.

Lumber—(Prices delivered to bldg. site)
Common, $34 per M (average).
Com'n O. P. (select), $45 per M (average)
Flooring—

1x6 No. 3—Form lumber	$22.00 per 1000
1x4 No. 1	73.00 per 1000
1x4 No. 2	70.00 per 1000
1x4 No. 3	47.00 per 1000
1x6 No. 2 and better	73.00 per 1000
1¼x4 and 6 No. 2	75.00 per 1000
Slash grain, 1x4 No. 2	48.00 per 1000
Slash grain, 1x4 No. 3	39.00 per 1000
No. 1 common run to T. & G.	35.00 per 1000
Lath	8.00 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.00 per bdle.
No. 2	.90 per bdle.
Red Cedar	1.10 per bdle.

Hardwood Floors—
Maple floor (laid and finished), 25c per foot.
Factory grade floors (laid and finished), 20c per foot.
Oak (quartered, finished), 40c per foot.
⅜ Oak (clear), 29c per foot (plain).
⅜ Oak (select), 27c per foot (plain).
⅜ Oak, quartered, sawed, clear, 35c.
WAGE—Floor layers, $9.35 per day.

Hardwood Floors (not laid)—

			Per M ft.
5/16x2"	sq. edge	Clear quartered oak	$173.50
		Select quartered oak	121.50
		Clear plain oak	119.00
		Select plain oak	95.00
13/16x2¼"	face	Clear quartered oak	210.00
		Select quartered oak	144.00
		Clear plain oak	157.50
		Select plain oak	114.00
		Clear maple	134.50
		Clear maple—white	178.00
13/16x3¼"	face	Clear maple	$134.50
1⅛x2¼"	face	Clear maple	134.50
⅜x2"	face	Clear quartered oak	158.00

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box frame windows (average) with trim, $7.50 and up each.
Doors, including trim (single panel), $10 and up each.
Doors, including trim (five panel) ..... $9.00 each
Screen doors, $3.50 each.
Window screens, $1.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $9 each.
Dining room cases, if not too elaborate, $10 each.
Labor— Rough carpentry, warehouse heavy framing, $13.00 per 1000.
For smaller work, average, $25.00 to $35.00 per 1000.
WAGE—Carpenters, $8.35 per day.
Laborers—Common, $6.00 per day.

Marble—(Not set) add 60c up per ft. for setting

Columbia	$1.90 sq. ft.
Alaska	1.90 sq. ft.
San Saba	3.25 sq. ft.
Tennessee	2.40 sq. ft.
Verde Antique	4.10 sq. ft.

Wages — Marble setters, $7.40 per day; helpers, $5.55 per day. Marble polishers and finishers, $6.00 per day.

Painting—
Two-coat work, 35c per yard.
Three-coat work, 50c per yard.
Whitewashing, 5c per yard.
Cold water painting, 9c per yard.
Turpentine, $1.08 per gal. in cases and 93c per gal. in tanks.
Raw Linseed oil, $1.00 per gal. in bbls.
Boiled Linseed oil, $1.02 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one ton purchases; 12½c lb. for less than 500 lbs.
WAGE—Painters, $8.35 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.30 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $8.00 at yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. warehouse $2.15 per bbl.
Lime in less than carload lots, $2.25 per bbl.
Hardwall plaster, $22.00 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Hydrate of lime, $22 per ton, f. o. b. warehouse.
WAGE—Plasterers, $10.20 per day.
Lathers, $9.25 per day.
Hod carriers, $8.35 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.25 per day.

Reinforcing Steel—
Base price for car load lots, $3.10 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $24 per ton.
WAGE—Housesmiths, $7.85 per day.

Roofing—
Five ply tar and gravel $6.50 per square for 30 squares or over.
Less than 30 squares, $7.00 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingle, $10.00 per square in place.
Cedar Shingle, $10.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $8.25 per sq.
Reinf'd Pabco, 20 yr. roof, $14 per sq.
Recoat, with Gravel, $3.00 per square.
Wage — Roofers $8.35 per day.

Rough Hardware—
Nails, per keg, $5.25 base.
Deafening felt, $90.00 per ton.
Building paper, P. & B.,
1 ply, $3.50 per 1000 ft. roll.
2 ply, $5.50 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.00 per hank 100 ft.
Common, $1.00 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 35c a square foot (not glazed).
WAGE—Sheet metal workers, $9.25 per day.

Stone—
Granite, average $11.00 sq. ft. in place.
Sandstone, average $7.00 sq. ft. in place.
WAGE—Stone cutters, $8.35 per day.
Stone setters, $8.35 and $8.80 per day.

Store Fronts—
Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.25 per lin. foot.
Zouri bar, $1.25 per lin. foot.
Zouri Underwriters' Specification sash, $1.60 per lin. foot.

Structural Steel—$130.00 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected) $121 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft. (Includes mullions and hardware.)

Tile—White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. foot, laid.
WAGE—Tilesetters, $8.35 per day.

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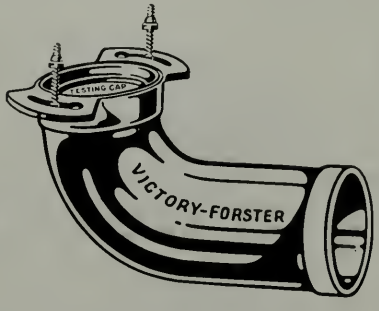

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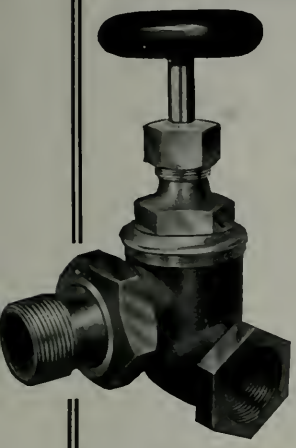

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Brown clapped down the receiver. He was a made man!

The Hatfield & Cummins patronage meant connections and prestige that would convert him into a formidable competitor for all sorts of big propositions.

But in five minutes he had lost ten years of his optimism. The estimate was not to be found. He remembered perfectly having carefully put it away where he could readily find it—although the thought of having a swing at the big job had never really grazed him.

It was too late to refigure the estimate—it must be found. In a mad scramble, Brown and his office helpers went pawing over everything in the office—but no result. Brown hasn't found that estimate yet although he gave up looking for it long ago.

His concern was not converted into prominence overnight. In the absence of an efficient filing system they had lost out in the big opportunity of years.

But Brown did not have to stub his toe twice to find out the trouble. He came into H. S. Crocker Company and told his story.

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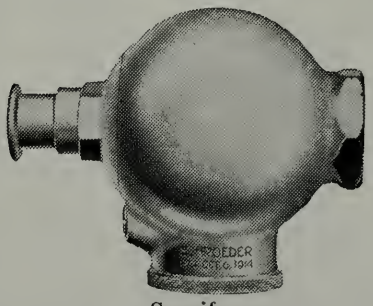

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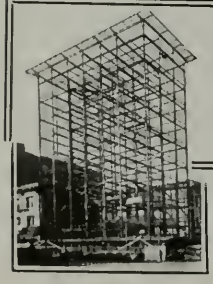

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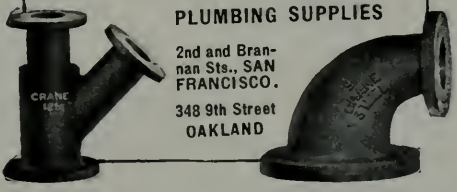

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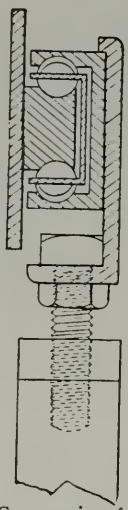

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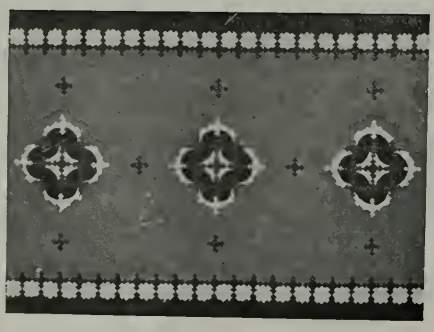

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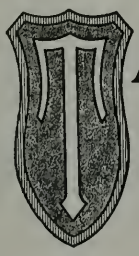

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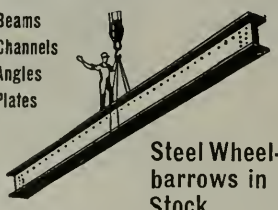

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIALS, SUPPLIES, ETC.
- Abeel-Jensen Co., Call Bldg., San Francisco.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.
- Johns-Manville Company, Post and Mason Sts., San Francisco.

CABINET MAKERS
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco
- Lannom Bros. Mfg. Co., 5th and Magnolia sts., Oakland.
- Pacific Mfg. Co., San Francisco, Los Angeles and Oakland.
- Frank Portman, 1618 Mission St., San Francisco.

CARPETS
- John Breuner Co., 281 Geary St., San Francisco.
- D. N. & E. Walter, Mission near Second street, San Francisco.
- W. & J. Sloane, 216-228 Sutter street, San Francisco.

CASEMENT WINDOW HARDWARE
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
- Victory Manufacturing Co., Monadnock building, San Francisco.

CEMENT
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass. James Hambley & Son, Distributors, San Francisco and Los Angeles.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Cement coating, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Lapidolith, manufactured by L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
- Cannon & Co., Sacramento, Cal.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Tropico Potteries, Inc., Glendale, Cal.
- United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
- Pacific Electric Clock Co., 516 Wells-Fargo Bldg., San Francisco.
- Standard Electric Time Co., 461 Market St., San Francisco.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

COMPOSITION FLOORS
- "Linotol" plastic flooring, Hill, Hubbell & Co., No. 1 Drumm street, San Francisco; 410 San Fernando Bldg., Los Angeles.

CONCRETE CONSTRUCTION
- Barrett & Hilp, 918 Harrison St., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- P. A. Palmer, Monadnock Bldg., San Francisco.
- I. M. Sommer, 401 Balboa Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE HARDENER
- Gunn, Carle & Co., Inc., 444 Market street, San Francisco.

CONCRETE MIXERS
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Smith-Booth-Usher Co., San Francisco and Los Angeles.

CONCRETE REINFORCEMENT
- Edw. L. Soule Co., Rialto bldg., San Francisco.
- United States Steel Products Co., San Francisco. Los Angeles. Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.
- Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
- Garnett Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, 918 Harrison St., San Francisco.
- Larsen-Siegrist Co., Inc., 807 Claus Spreckels Bldg., San Francisco.
- R. W. Littlefield, 357 12th St., Oakland.
- Lawton & Vezey, Call building, San Francisco; Plaza building, Oakland.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL—Continued
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Unit Construction Co., Phelan Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- John M. Bartlett, 357 Twelfth St., Oakland.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- Herbert Beckwith, 323 Newton Ave., Oakland.
- Collman & Speidel, 546 Monadnock Bldg., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 251 Kearny street, San Francisco.
- Fontanella & Teza, 1682 Eddy Street, San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- T. B. Goodwin, 180 Jessie St., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- McLeran & Co., R., Hearst Bldg., San Francisco.
- Robert Trost, 26th and Howard Sts., San Francisco.
- I. M. Sommer, 401 Balboa Bldg., San Francisco.
- S. G. Jackson, 351 12th St., Oakland.
- Jas. L. McLaughlin, 251 Kearny street, San Francisco.
- Alfred H. Vogt, 185 Stevenson street, San Francisco.

CONTRACTORS' EQUIPMENT
- Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
- Garfield & Co., Hearst Bldg., San Francisco.
- Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CONVENIENCE OUTLETS
- Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard street.

CRUSHED ROCK
- Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Gunn, Carle & Co., Inc., 444 First street, San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- "Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.
- Lapidolith, manufactured by L. Sonneborn Sons, Inc., Los Angeles, Portland, and Seattle; 269 Spear street, San Francisco.

DOOR HANGERS
- Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
- Reliance Hanger, sold by Waterhouse-Wilcox Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Oregon.
- Stanley Works, New Britain, Conn. Monadnock Bldg., San Francisco.
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
- Haws Sanitary Drinking Faucet Co., 1808 Harmon St. Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 166 7th St., San Francisco.
- San Francisco Elevator Company, Inc., 860 Folsom street, San Francisco.

ELECTRICAL CONTRACTORS
- Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
- Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
- Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
- Central Electric Company, 185 Stevenson street, San Francisco.
- NePage, McKenny Co., 589 Howard St., San Francisco.
- Newbery Electrical Co., 359 Sutter street, San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Globe Electric Works, 1959 Mission St., San Francisco.
- M. E. Ryan, Redwood City, and 520 Clunie building, San Francisco.
- H. S. Tittle, 766 Folsom St., San Francisco.
- Spencer Electric Co., 355 12th street, Oakland.
- Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
- Garnett Young & Co., 612 Howard St., San Francisco.
- Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
- Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard street.
- Safety Electric Company, 56-65 Columbia Square, San Francisco.
- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
- Western Electric Safety Mfg. Co., Inc., 247 Minna street, San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 166 7th St., San Francisco.
- San Francisco Elevator Co., 860 Folsom street, San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

ESTIMATOR—BUILDINGS AND ENGINEERING WORKS
- Arthur Priddle, 185 Stevenson street, San Francisco.

PNEUMATIC WATER PRESSURE SYSTEMS

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FENCES—WIRE
Standard Fence Construction Co., 245 Market St., San Francisco, and 310 12th St., Oakland.

FILLING STATION EQUIPMENT
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE-PROOF DOORS
Forderer Cornice Works, 269 Potrero avenue, San Francisco.
U. S. Metal Products Co., 330 10th street, San Francisco.
Fire Protection Products Co., 3117 20th street, San Francisco.

FIRE SPRINKLERS—AUTOMATIC
Grinnell Company, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma street, San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
L. Sonneborn Sons, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—DUST PROOF CEMENT
L. Sonneborn Co., 269-271 Spear street, San Francisco.

FLOORS—HARDWOOD
Oak Flooring Manufacturers' Association of the United States, Ashland Block, Chicago, Ill.
Parrott & Co., 320 California St., San Francisco.
Strable Hardwood Company, 511 First street, Oakland.

FLOORS—MASTIC
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
S. T. Johnson Co., 1337 Mission St., San Francisco.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
Pacific Heating Company, Second and Grove streets, Oakland.

FURNITURE—BUILT-IN
Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.
W. & J. Sloane, 216 Sutter street, San Francisco.

GARAGE HARDWARE
The Stanley Works, New Britain, Conn., Coast Sale offices, San Francisco, Los Angeles and Seattle, Wash
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission st., San Francisco.
Cobbledick-Kibbe Glass Co., 175 Jessie St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco, and Syndicate building, Oakland.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

JOHN A. PETERSON, President B. HEINRICH, Vice-President

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PHONE FRANKLIN 2302
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CABINET WOODS

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL AND SAND
- Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
- Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT
- Ellery Arms Co., 583 Market St., San Francisco.
- A. G. Spalding & Bros., 625 Market St., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
- Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
- The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
- Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
- Dieckmann Hardwood Lumber Co., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- Strable Hardwood Company, First street, near Broadway, Oakland.
- E. L. Bruce Company, American oak flooring, Memphis, Tenn.

HEATERS—AUTOMATIC, GAS, ELECTRIC
- Electric Sales Service Co., mfrs. of Therm-elect Water Heater, West Berkeley.
- Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
- Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.
- Wm. J. Schwerin, Ag't Hulbert Electric Steam Radiator, Rialto Bldg., San Francisco.

HEATING AND VENTILATING CONTRACTOR'S, EQUIPMENT, ETC.
- Atlas Heating and Ventilating Company, Inc., Fourth and Freelon streets, San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco.
- C. A. Dunham Co., Sheldon Building, San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Hateley & Hateley, Mitau Bldg., Sacramento.
- Knittle-Cashel Co., 224 Fifth street, San Francisco.
- General Boilers Co., 332 Monadnock Bldg., San Francisco.
- Mangrum & Otter, 827-831 Mission St., San Francisco.
- James & Drucker, 450 Hayes St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.
- Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
- William F. Wilson Co., 328 Mason St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
- Scott Company, 243 Minna St., San Francisco.
- O. M. Simmons Co., 115 Mission St., San Francisco.
- Griffin Sheet Metal Works, Fresno.
- W. H. Picard and F. J. Edwards, 5656 College Ave., Oakland.

HOLLOW TILE BLOCKS
- Cannon & Co., plant at Sacramento; 770 O'Farrell street, San Francisco.
- Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
- Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
- Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
- St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant streets, San Francisco.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
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- John Breuner Co., 281 Geary St., San Francisco.
- Sonnenschein Bros., 470 Sutter St., San Francisco.
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- The Tormey Co., 1042 Larkin St., San Francisco.
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- Roberts Mfg. Co., 663 Mission St., San Francisco.
- Perfeclite Manufacturing Co., Seattle, Wash.; San Francisco Representatives, Myers & Schwartz, 75 New Montgomery street, San Francisco; 1119 S. Los Angeles street, Los Angeles.

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- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., 562 Mission St., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
- W. & J. Sloane, 216 Sutter street, San Francisco.

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- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco

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- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Santa Fe Lumber Co., 16 California street, San Francisco.
- Sunset Lumber Company, First and Oak Sts., Oakland.

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- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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- Mangrum & Otter, 827-831 Mission St., San Francisco.

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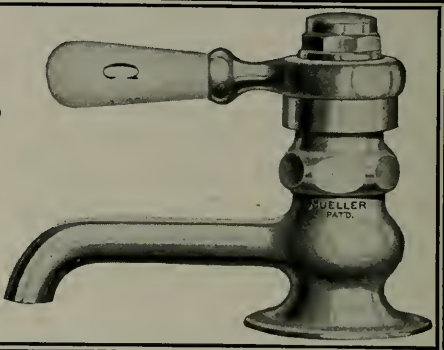

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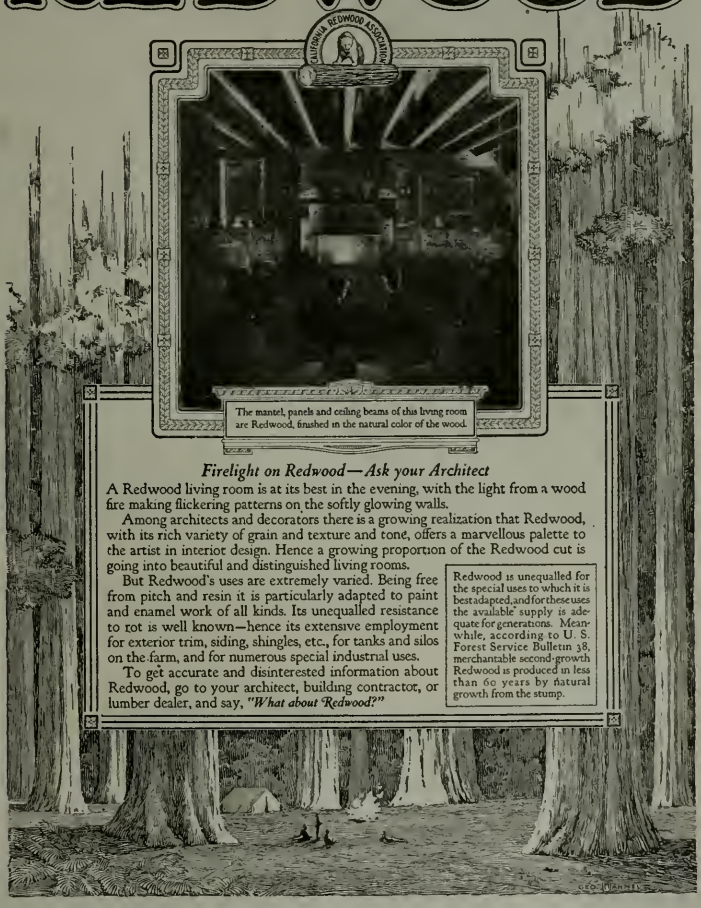
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Redwood is unequalled for the special uses to which it is best adapted, and for these uses the available supply is adequate for generations. Meanwhile, according to U. S. Forest Service Bulletin 38, merchantable second-growth Redwood is produced in less than 60 years by natural growth from the stump.

This Advertisement is appearing in the December issue of Atlantic Monthly, Century, Harpers, Scribners, The Review of Reviews, World's Work

THIS advertisement is written with just one purpose in mind: to send prospective home-builders to their logical technical advisers—the architect, the building contractor and the lumber dealer—with a question: "What About Redwood?" You can answer this question, and it is your opportunity to secure a client or a customer. Complete information, prices and specifications may be obtained by addressing any of the sales and distributing branches listed below:

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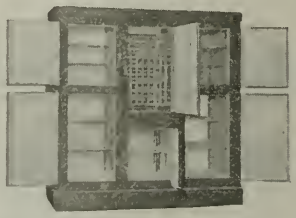

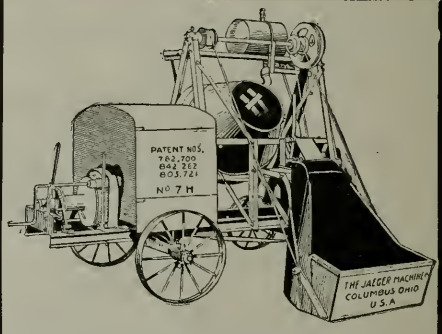

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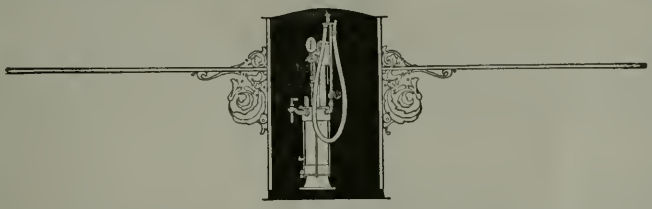

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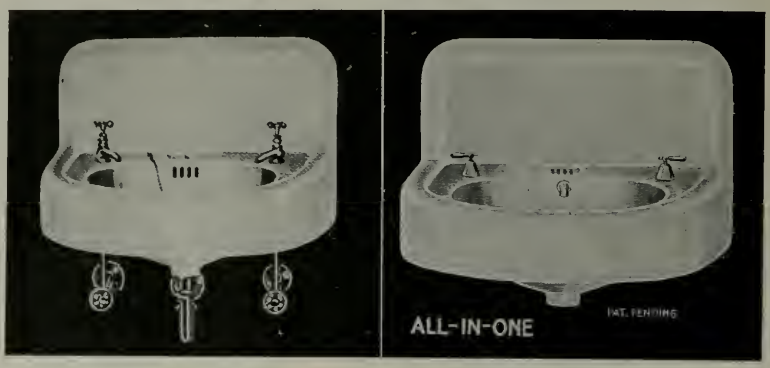

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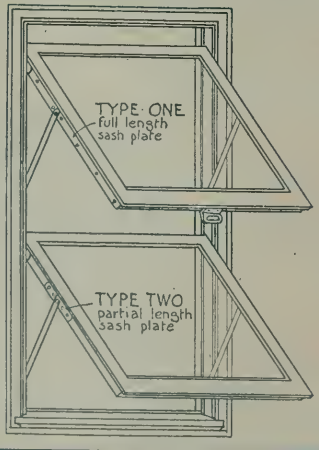

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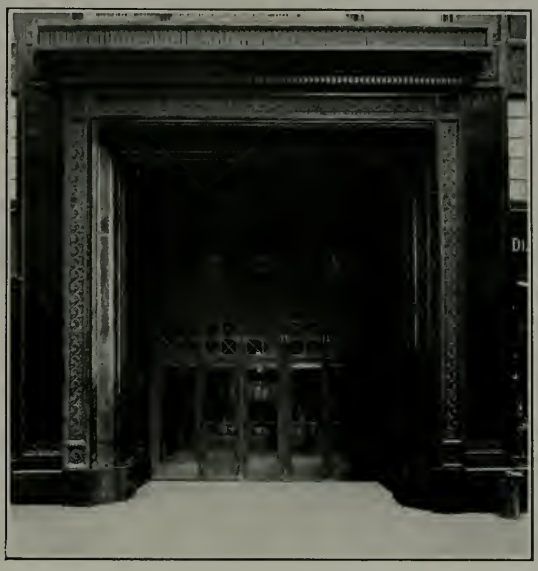

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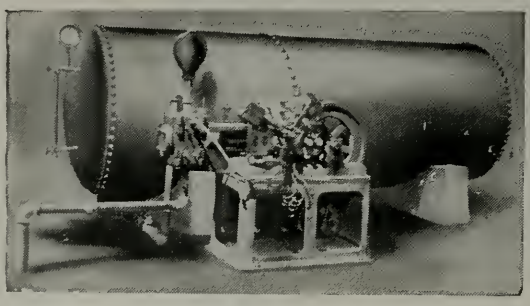

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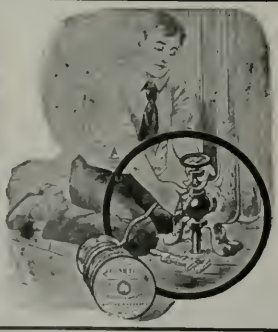

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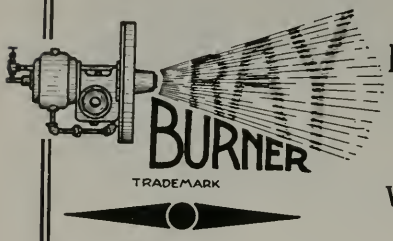

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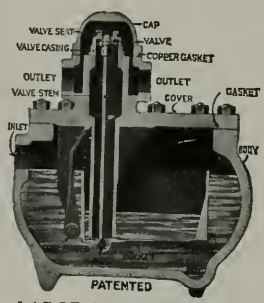

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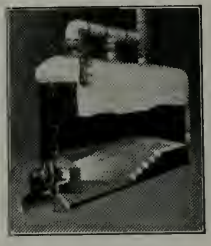

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ENTRANCE, HOUSE FOR MR. R. S. MOORE,
SAN MATEO, CAL. ALBERT FARR, ARCHITECT

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DECEMBER
1921

Vol. LXVII
No. 3

A New Addition to California's Spanish Tradition

By IRVING F. MORROW.*

ONE can scarcely know and relish the oak-dotted levels and rolling slopes of the California lowlands without feeling that it was one of the happy accidents of history that entrusted their early development to a race which looked back to Mediterranean architectural traditions. It was even a happier accident than that. For of all the various aspects of the southern or Mediterranean architecture of Europe, none is in so intimate a native sympathy with the California scene as the Spanish. Whatever opinion one may hold as to the beauty and value of English, French, or other northern architectures, it is difficult to imagine the California coasts and valleys subjected to their more reticent and cautious disciplines without losing thereby an appreciable share of their sunny spontaneity and enthusiasm. The gentler landscapes of England and France find analogies in those of the eastern United States, where their architecture encounters a congenial field for renewed development. That was another happy historical accident. It would likewise be unfortunate if these regions had been settled, say, by Spaniards, and received several generations of development out of harmony with their real genius. History, in this respect, has worked blindly, but aright.

Although the architecture of California enjoyed essentially the proper start, there was for a time a danger that a really fruitful development might be frustrated. Responsible designers showed a regrettable tendency to abandon the native and appropriate tradition, and irresponsible ones referred to it only to misrepresent it with the most fantastic and unsympathetic distortions. In this way material of innate nobility was degraded, and the term "Mission" came to be almost an epithet of contempt among cultured people.

Architects of the last few decades have realized the wisdom of returning to the original sources of inspiration. A California architecture both appropriate and distinctive is coming into being. We are picking up the tangled, almost lost threads of the Spanish tradition; and perhaps the most

*Of the firm of Morrow & Garren, Architects.

hopeful sign of the process is that it progresses without pedantry. We are getting—outside of the larger cities—not archaeology, but a living architecture. The smaller towns and the rural districts are setting the pace. (Just why building in our larger cities should exhibit an almost exclusive tendency toward either archaeology or engineering would be an interesting subject for inquiry. It is true, nevertheless, that we do not tend to look further in town than the suburban districts for spiritually significant developments.) It is also important that we are drawing on the spirit of Spanish work,

STAIR HALL, HOUSE FOR MR. R. S. MOORE, SAN MATEO, CAL.
Albert Farr, Architect

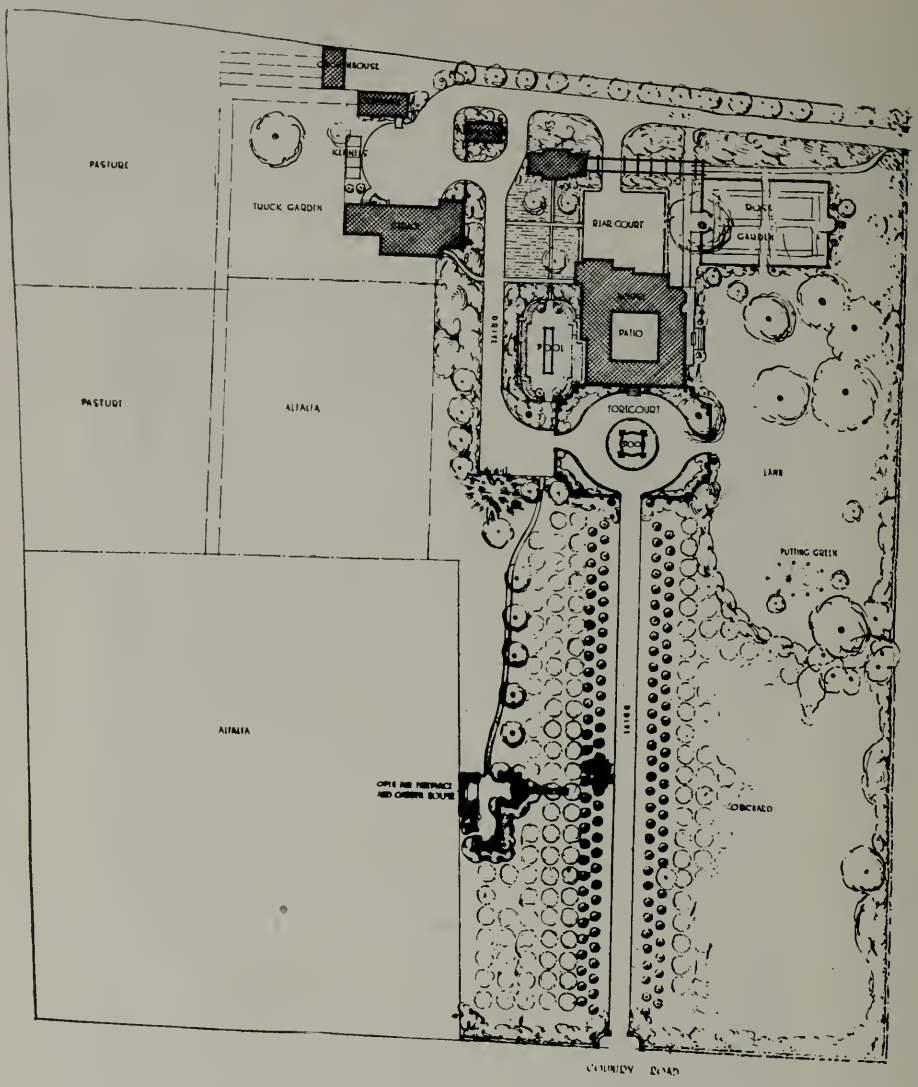
rather than on the letter of any particular narrowly imposed style. However consistent and recognizable as a body may be the bulk of the new architecture of California, within itself it is extraordinarily varied. This is a good sign. It means that we are in the presence of the elements of a living style.

The house which Mr. Farr has designed for Mr. R. S. Moore at San Mateo is one of the most recent of the larger accessions to this new California architecture. It is one of the most interesting as well. Mr. Farr's building is of distinctly Spanish derivation, both as to its composition and its detail. It has, however, made a wide departure from the original form of

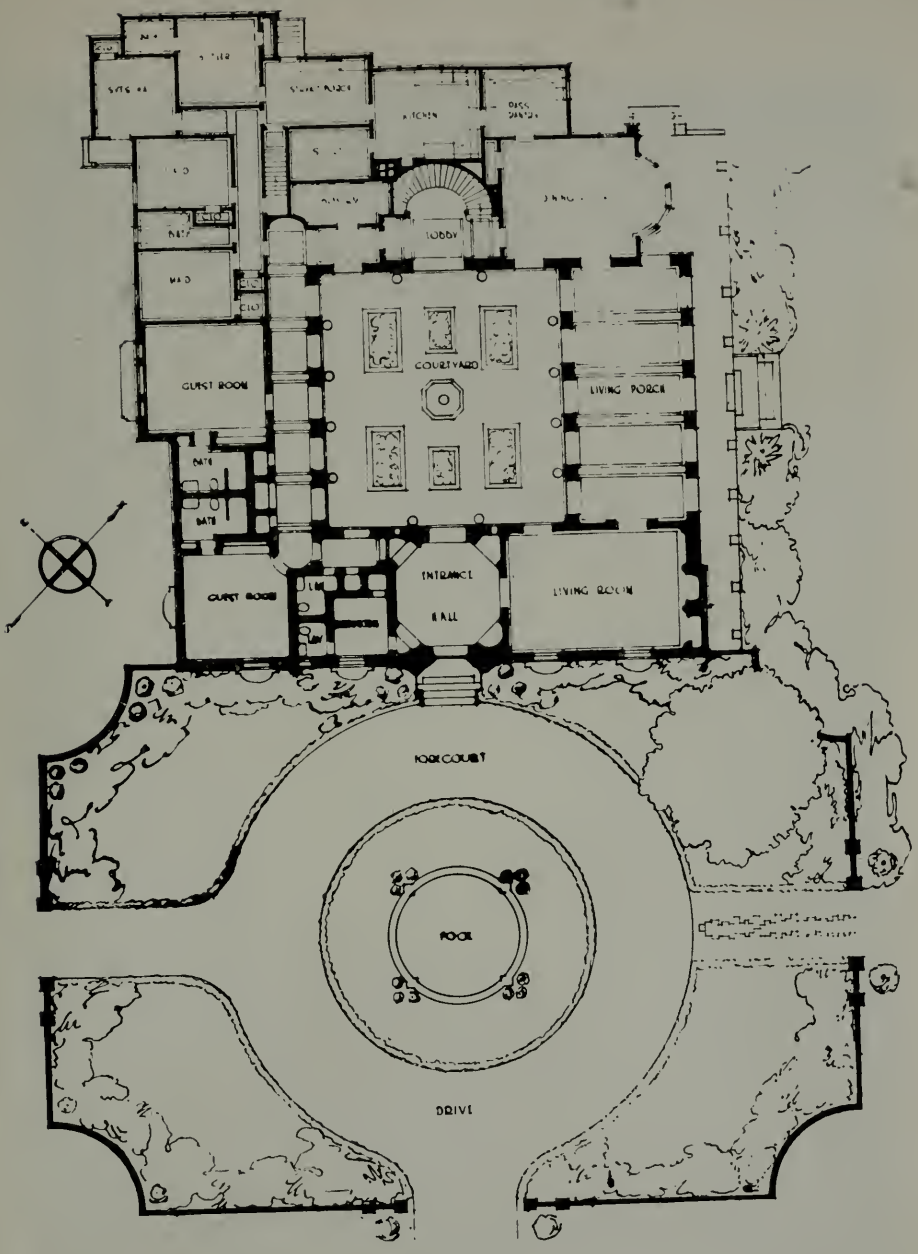
the Spanish-California tradition. If Mission architecture was austere, often even bald, this was, of course, not due to any ideals of religious asceticism. Many a Spanish and Mexican church can testify to that. The self-denying aspect of the California missions was rather imposed by industrial and economic conditions. Our own liberation from such restrictions is being attested by an occasional architectural fling. Mr. Farr has here had his fling. He has perhaps never done anything quite so irresponsible and exuberant. His church at Piedmont may be more capricious in composition, but its parts are

STAIR HALL, HOUSE FOR MR. R. S. MOORE, SAN MATEO, CAL.
Albert Farr, Architect

more decorous in themselves. Here he has freely mingled elements both Baroque and Moorish, with the same piquant effect which certain of the work of southern Spain attains through the same whimsical means. At the main entrance the relations of scales is not felicitous. The delicate columns are overwhelmed by the weight of the colossal ornament adjoining and surmounting them, and the paneling of the doors themselves appears by contrast excessively minute. But the effect of this entire ornamental excrescence is both vivacious and self-confident, and the composition as a whole is not without conspicuous picturesqueness and repose. In spirit it is distinctly of California, and a really notable addition to our architecture.

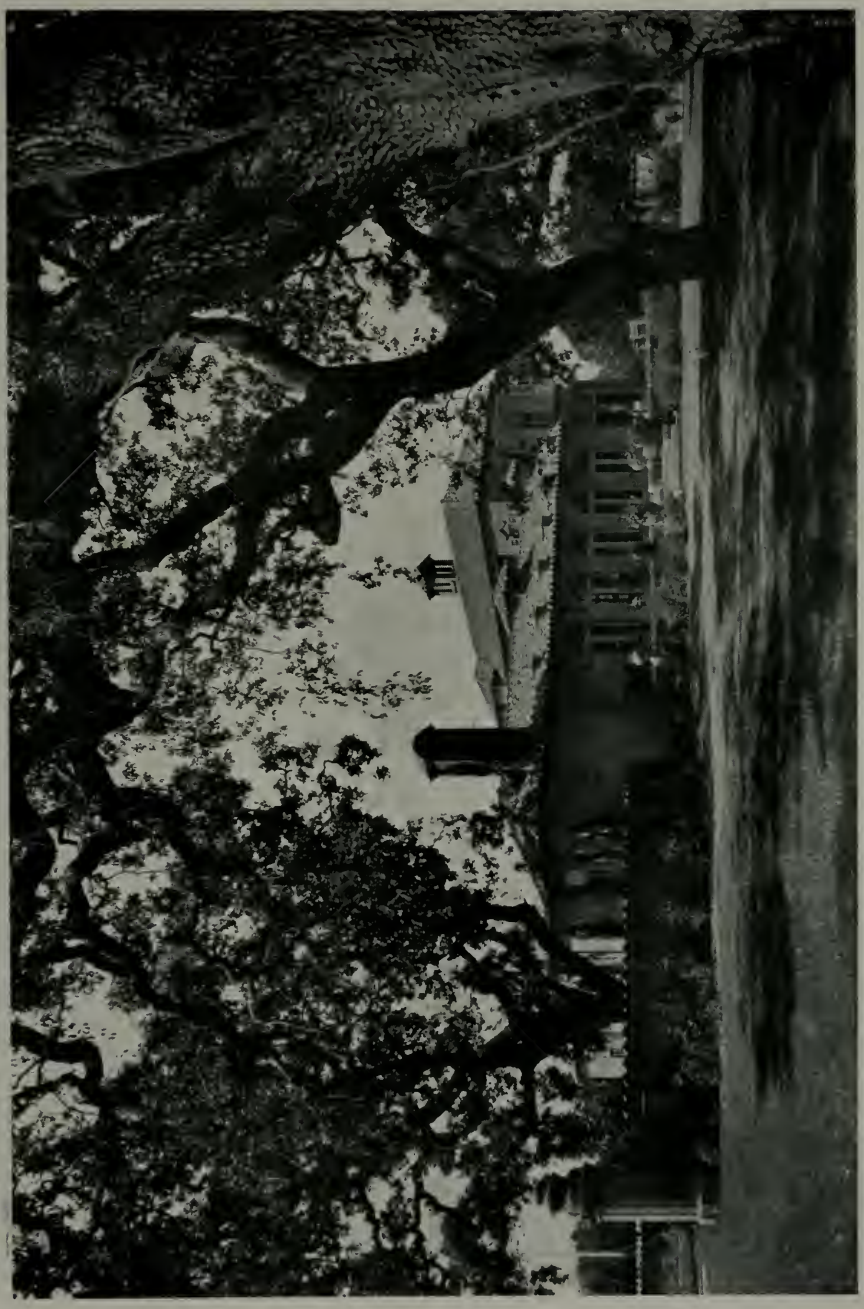


BLOCK PLAN, HOUSE FOR MR. R. S. MOORE, SAN MATEO, CAL. ALBERT FARR, ARCHITECT



FIRST FLOOR PLAN, HOUSE FOR MR. R. S. MOORE, SAN MATEO, CAL. ALBERT FARR, ARCHITECT

VIEW DOWN DRIVEWAY, HOUSE FOR MR. R. S. MOORE,
SAN MATEO, CAL. ALBERT FARR, ARCHITECT



VIEW FROM EAST, HOUSE FOR MR. R. S. MOORE,
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GARDEN HOUSE, HOUSE FOR MR. R. S. MOORE,
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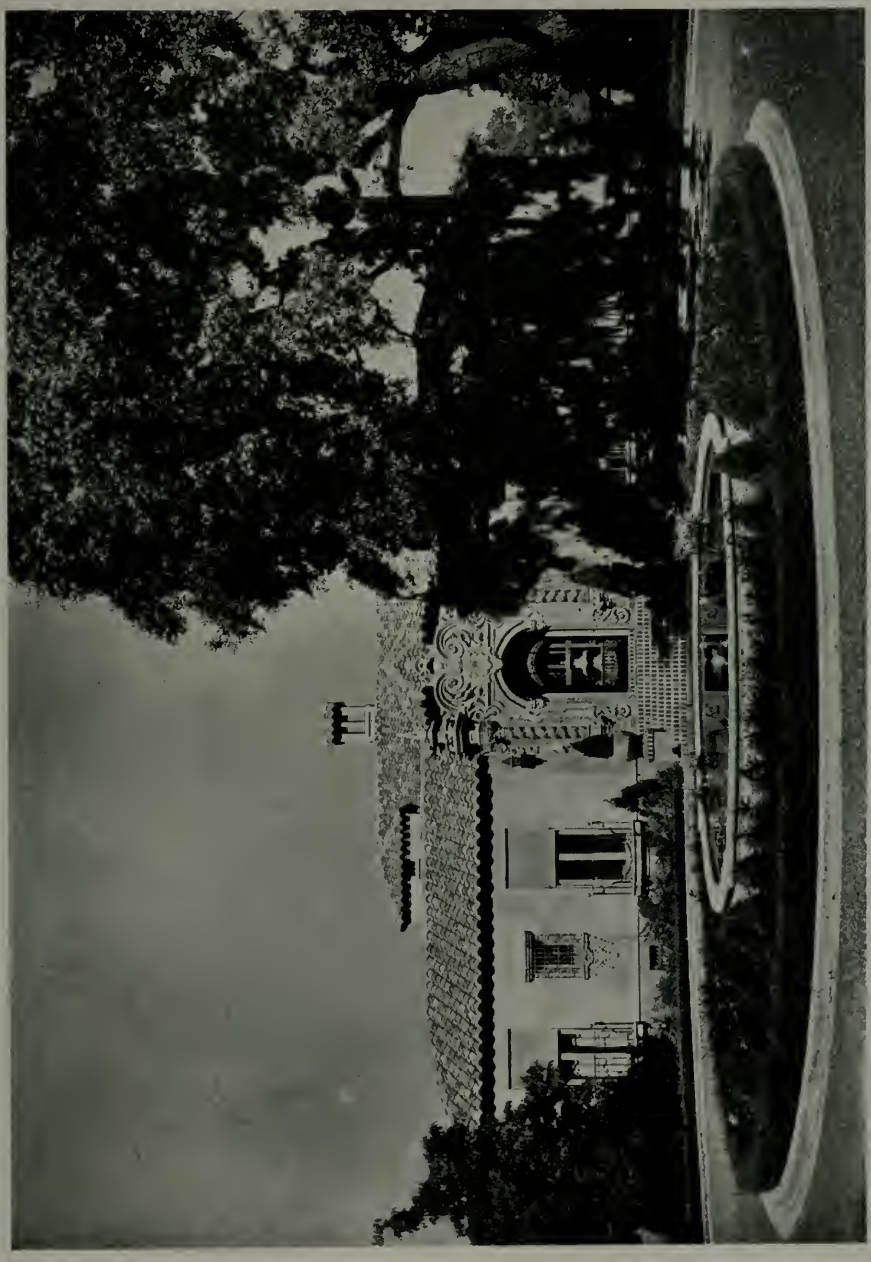

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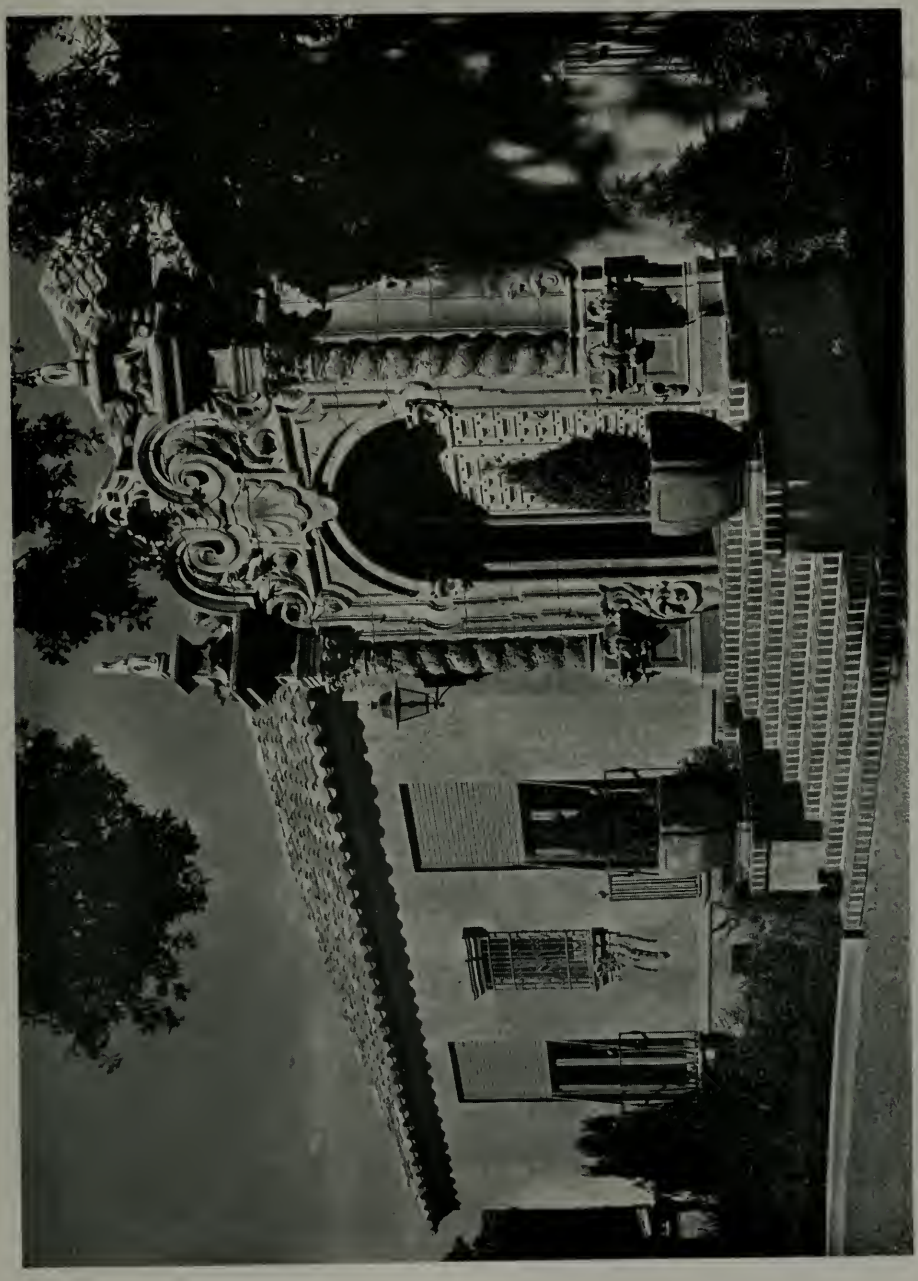

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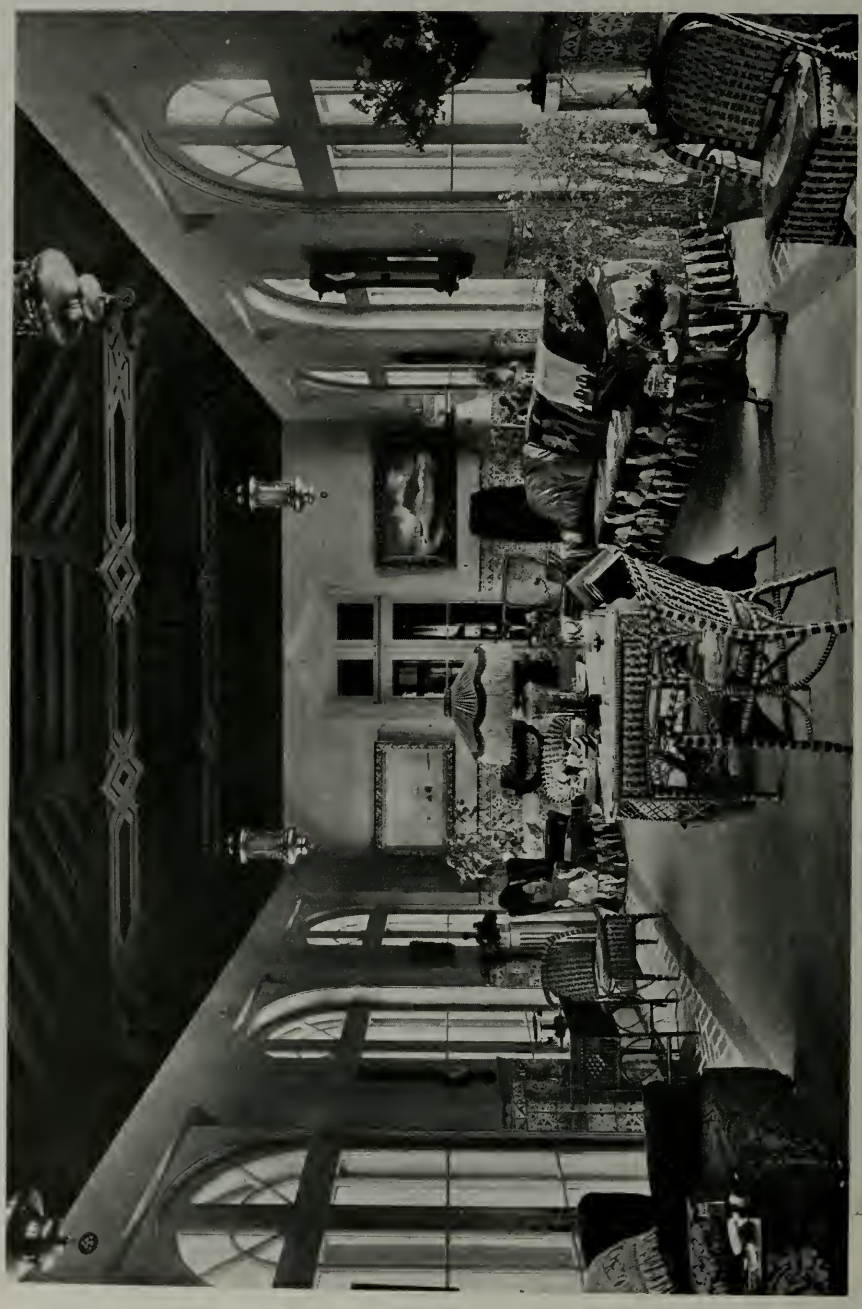

LIVING PORCH, HOUSE FOR MR. R. S. MOORE,
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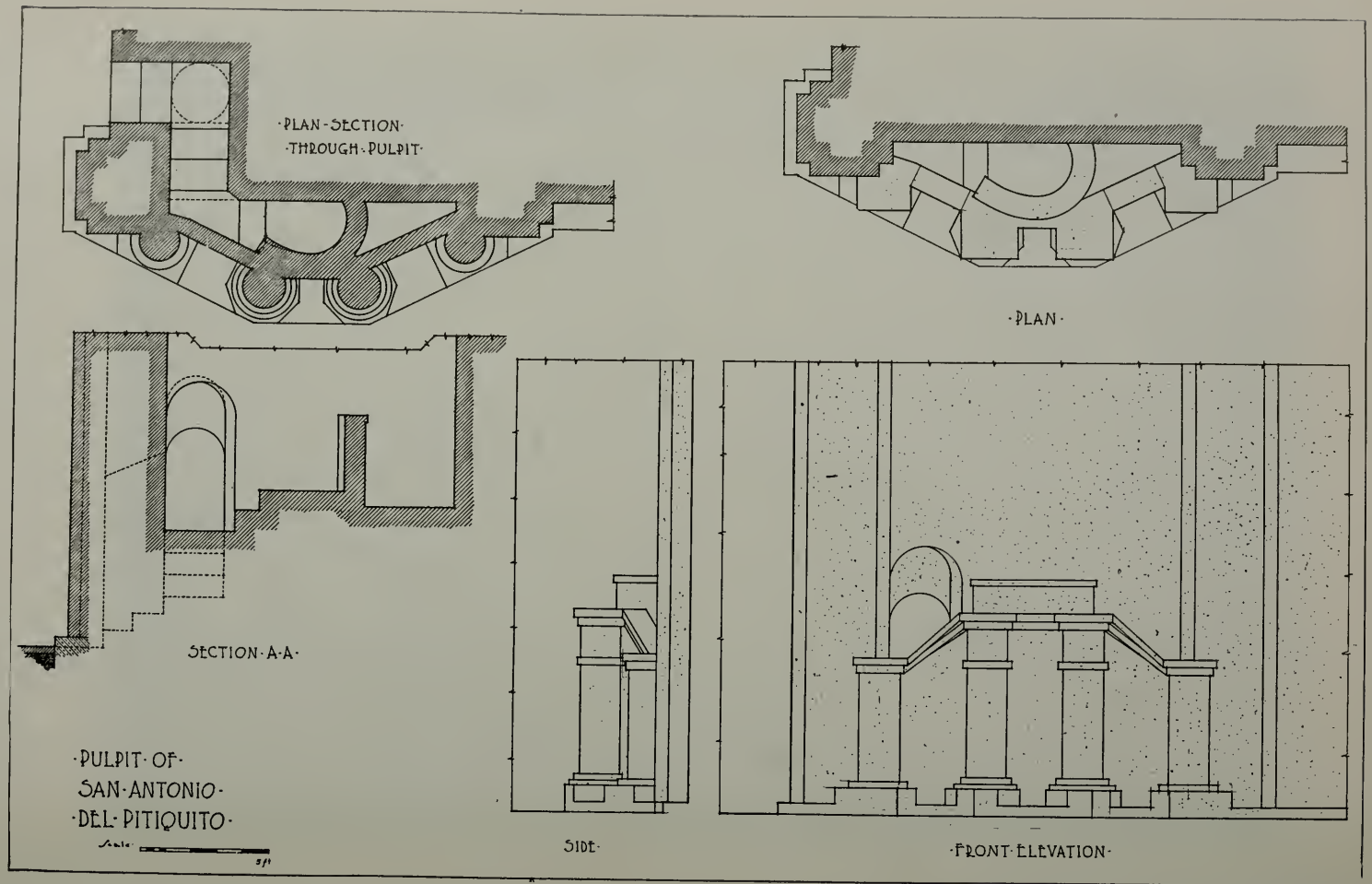


PULPIT OF SAN ANTONIO DEL PITIQUITO

The Arizona-Sonora Chain of Missions

By PRENTICE DUELL, A. M.
Dept. of Architecture, University of Illinois

III. THE MISSIONS OF SONORA

A FEW miles north of the great ruin of Caborca is the mission San Antonio del Pitiquito, at once the most unique and singularly individual of all the missions. To one interested in mission architecture it is a delight to come upon such a structure, especially after making the toilsome journey among the Sonora missions and finding that many of them exist for the most part in name only.

Pitiquito is an anomaly in mission architecture and appears to have been

FACADE, SAN ANTONIO DEL PITIQUITO

built by some master-builder who cared but little for precedent and had ideas of his own about mission churches. In general, it calls to mind the Jesuit churches on the Continent, which are monumental and heavy, making the most pretentious appearance for the money available. But whether Pitiquito is really the work of the Order of Jesuits cannot be ascertained, though it is generally agreed between students of the subject that no Jesuit structures remain intact in the Arizona-Sonora chain.

Sitting on a slight hill, the church is raised still higher upon a podium which extends across the entire front, including the remains of the monastery building to the left. There is a certain austere impressiveness about the design which dominates throughout. The facade is completely devoid of decoration, save that of the pseudo-classic entrance, and could hardly be farther removed from the usual ornate and fanciful compositions of the Franciscan builders. The nave is plain almost to poverty; bare walls, a

simple altar surmounted by a massive segmental pediment, and before each of the lateral chapels a monumental pile of masonary representing, respectively, the pulpit and the confessional. These two latter objects are, indeed, foreign to any style of architecture, yet, in Pitiquito they seem quite in place.

Every element of the design is functional. Whatever decoration there might be is fundamentally construction so treated. It is not merely an arbitrary encrustation with no relation to the structure as is found in many of these missions and which is their greatest fault. The vaulting is especially commendable and might be considered the notable feature of the structure. A hugh barrel vault covers the nave, extending to the square drum with its dome above; barred vaults cover also the transepts, apse and sacristy. A small dome, surmounted by a lantern crowns the baptistry and in the cloister beyond, a series of vaults cover the bays. The cloister con-

THE CLOISTER FROM THE REAR, SAN ANTONIO DEL PITIQUITO

tinued on two or more sides of an enclosed patio and the effect must have been striking with the massive piers, the high and narrow arches and the varied forms of vaulting. Though Pitiquito may lay no claim to architectural beauty it stands, nevertheless, the finest example of masonry construction in mission architecture.

The next mission is San Antonio de Oquitoa, a small but effective composition and one handled with a grace which is almost effeminate. Today, the church gives but a suggestion of its pristine beauty; one's imagination must supply the fanciful colums before the pilasters, the delicate, encrusted wall ornament, and the statuettes in the niches. The decoration about the doorway, however, is still in excellent condition and possesses a refinement that is rarely found in many of the more pretentious missions.

The nave is rectangular and of good proportion, but entirely devoid of ornament. The only thing of interest is a wooden *reredos,* or screen, which rises above the altar. At one time it was brilliantly colored, the body being

gold with the mouldings and panels in the primary colors. The parts are hinged together so it could be folded up and transported with convenience. Apparently, the altar was built with such a feature in mind, for it stands away from the wall.

To the right of the apse, or sanctuary, is the sacristy. Adjoining it, and lying next to the nave, is a large room which probably served as a chapel. The monastery building extended to the right from the church, but being constructed entirely of adobe, only a few walls are now extant. Along this side of the church an outside stairway leads up to a small doorway which enters onto the choir-loft over the entrance.

The walls of the church also are adobe but to either side a facing of burned brick is securely tied, a construction which has withstood the test of time almost as well as that of solid masonry. A vaulted roof, however, was impos-

SAN ANTONIO DEL PITIQUITO

sible, so another was devised, consisting of stalks of *ocotilla* with a heavy surface coating of adobe, the whole supported on mesquite *vigas*, or beams.

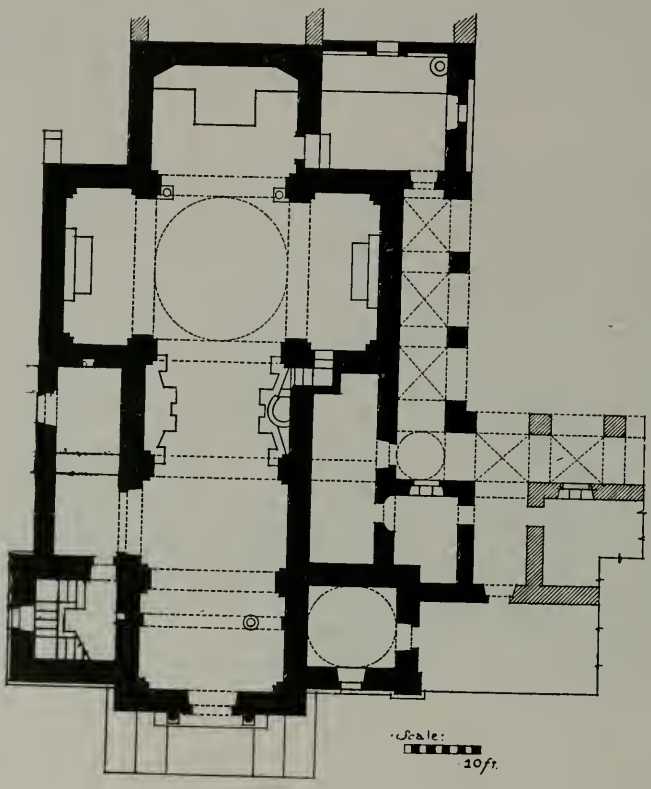
A few miles further is mission San Francsco de Atil, one of the smallest of all mission churches, though according to the archives it was a very important post. Only one other mission may be cited as being of lesser dimensions, namely, San Francisco de La Espada, near San Antonio, Texas.

There is a great deal of charm about Atil due to its simplicity and the skillful handling of the few, yet fundamental elements required in a mission plan. It seems the very essence of mission architecture. The nave is rectangular, with a sacristry adjoining to the left; continuing on this side was the monastery building. To the right is a stairway leading to the roof and through a happy stroke of imagination on the part of the designer, it is supported by the cemetery wall into which a hugh, arched gateway was built, thereby relieving the composition of any heaviness which it might otherwise

have. There is a pleasing balance of the various elements of the design, which is especially noted when the church is viewed in direct elevation.

The structure is entirely of adobe, though judging from the remaining brick veneer of the facade, the walls of the church proper might have been so treated. The roof is similar to that of Oquitoa and it might be inferred that the monastery building also had such a roof.

It is well that the last mission which we shall consider should be San Pedro y San Pablo de Tubutama, the greatest of the Sonora missions. The church sits on a high hill and can be seen for a great distance from the



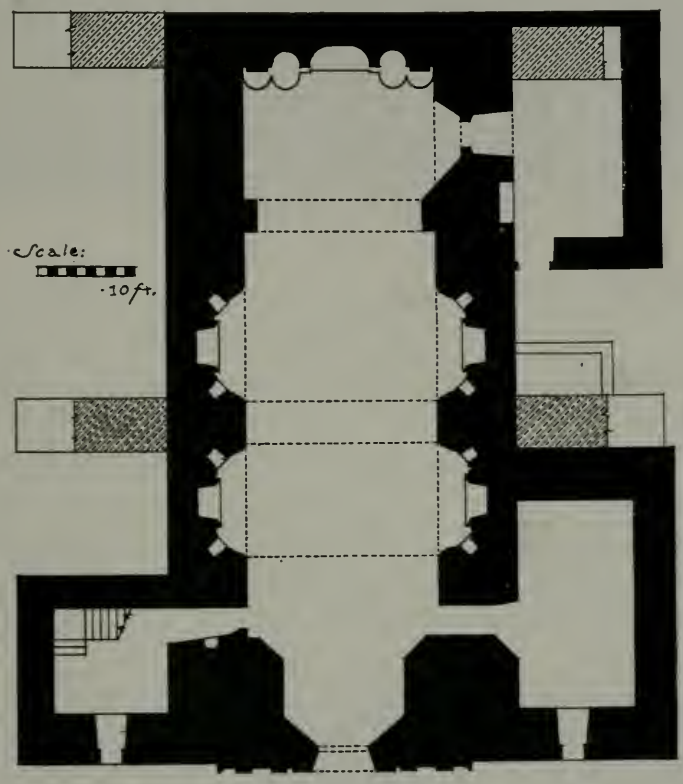
PLAN, SAN ANTONIO DEL PITIQUITO

valley, a condition which the padres considered very favorable since it was ever before the eyes of the Indian.

The long, fanciful facade when seen from below has a great deal of interest about it and one's expectations grow even more upon a closer inspection. There is a certain repose about the church, though it is apparent that it was remodeled two or more times. The bell-tower is a later addition and is rather awkwardly connected with the church, while the ornamental gable about the entrance is nothing more than a heavy brick veneer practically leaning against the wall.

The original entrance was undoubtedly on the east where the tower stands, but was changed to the south side by the Franciscans in order that the church might have a frontage corresponding to their other missions.

Though the ornamental facade about the entrance is Franciscan design, its decoration, nevertheless, is utterly at variance with their other work. In mass it is second only to San Xavier in Arizona, but in detail it falls far short and approaches mediocrity. There is but little symbolism connected with the patterns and on the whole resolves itself into a meaningless ostentation. The angels, vases and recessed openings are arranged in a promiscuous fashion, giving a rather unrestful feeling, though all are in such a low relief that the *ensemble* of the church is scarcely affected. It must be considered, however, that the heavy balcony which originally projected above



PLAN, NUESTRA SENORA GUADALUPE DE COCOSPERA
(See Architect & Engineer for September, 1921, Vol. LXVI, No. 3, p. 67 ff.)

the doorway did much to draw the various parts of the design together to a point of interest.

The plan of the church is good and makes a pleasing picture when drawn to scale; but one feels, however, it was not the work of one man. In the decoration of the nave the hand of the Indian is evident, yet there is an unmistakable suggestion of Spanish influence underlying the whole composition. The series of arcatures on either side were an innovation both ingenious and legitimate; the nave, otherwise narrow, is thereby given a feeling of breadth without lessening to any great extent the sustaining properties of the walls. Above all, the encrusted decorations of the ceiling are the chief objects of interest in the interior. The whole of the vaults are covered with

FACADE, SAN ANTONIO DE OQUITOA

light patterns, abstract and geometrical, but having no aesthetic relation to the design of the structure. Originally, they were probably covered with gold-leaf, but now they have suffered the fate of the rest of the interior with the inevitable coat of whitewash. Consequently no traces of wall-decoration are visible, though undoubtedly there were frescoes set in the arcatures.

For the connoisseur of Spanish arts and crafts the sacristy holds much of artistic and historic value, though what remains, however, is merely by virtue of oversight on the part of the early visitors. There is an old chest of drawers made to hold the ceremonial garments, an ambry or cabinet set in the wall for the vessels of the service, a few bits of wood-carving and several faded oil paintings in gilt frames. The chest sets on a raised platform, while above it and in the circumscribing arch which springs from the

FACADE, SAN FRANCISCO DE ATIL

FACADE, SAN PEDRO Y SAN PABLO DE TUBUTAMA

corner pilasters on either side is set a very old and interesting picture. The The chest itself is simple in line, of good proportion, and would make a valuable asset to any group of mission furniture.

The ambry is similar to many other such cases found among the missions, but it, in particular, seems to have been made with more care. The doors are fitted so well into the frames that the painted decorations on the inside still appear quite fresh and retain much of their original quality. There is really no better example of coloring as employed by the padres than in this instance. About the floor of the sacristry are scattered a number of most exquisitely carved book-rests. One is tempted to carry them away to a museum, but they are so much a part of the disintegration and ruin of the church itself that it would seem an almost heretical perpetration.

The baptistry is a pleasing architectural composition, dimly lighted, and

SAN ANTONIO DEL PITIQUITO FROM THE REAR, SHOWING THE REMAINS OF THE ADJOINING WALLS

with a certain monastic simplicity about it. The font occupies the center of the room and the only other object is an old painting set into the wall and framed by a wide and flat moulding. It might be inferred that this particular picture was in mind when the room was built, and if such were the case, the picture was considered of no little value. At any rate, the painting appears to be one of the best seen today in the missions. Because of its being unsigned, the names of many well-known artists of the old Span-

LOOKING TOWARD LEFT TRANSEPT, SAN PEDRO Y SAN PABLO DE TUBUTAMA

ish school have been connected with it. As a rule, every old picture in Mexico with some question as to its authenticity is attributed to Murillo.

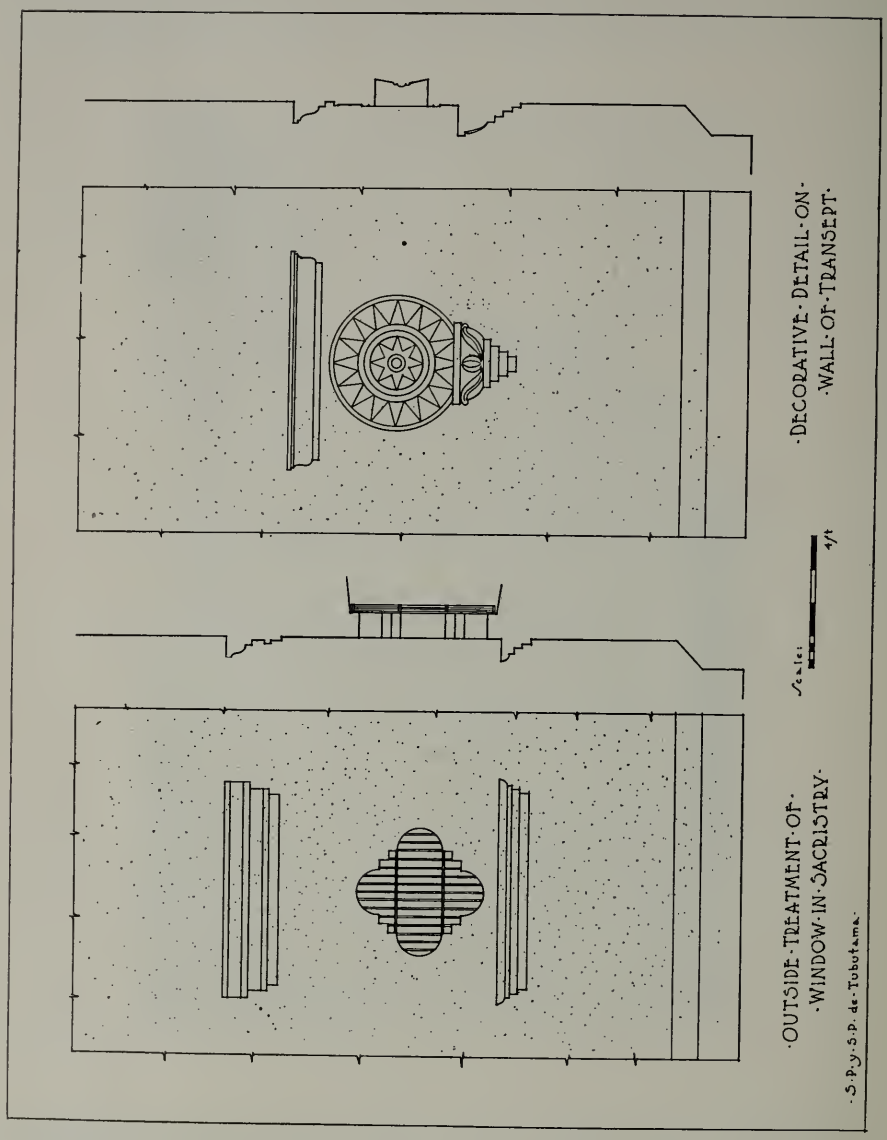
No description of Tubutama would be complete without a word concerning its chime of eight bells. In mission campanology this chime is well known, and second only to the almost legendary "lost" chime of mission San Juan Bautista in California. The oldest bell was cast in the year 1742 and christened Santa Barbara.

Though the construction of Tubutama is masterful, the quality of the bricks seems much inferior to that of the other large missions in Sonora. The reason might be that since the sand-dune country begins not far away the soil in this locality was not well-adapted to the simple methods the padres employed in brick-making. The roof of the church is solid masonry and is laid-up entirely in the form of barrel vaults, excepting the baptistry, which is covered by a low dome. Over the crossing rises a large drum

FACADE, SAN PEDRO Y SAN PABLO DE TUBUTAMA

surmounted by a dome, both of which are treated in a decorative manner not found elsewhere in this chain of missions.

In leaving Tubutama, it is not the architecture of the church which one carries away in memory, but rather its wealth of old paintings, wood carvings and bells. It is a veritable treasure house of Spanish *objets d'art* of the mission days, and one upon which the Hand of Time rests but too heavily.



DETAILS, SAN PEDRO AND SAN PABLO DE TUBUTAMA

Report on Quantity Survey

FOR more than a year the Associated General Contractors of America have been studying Quantity Survey and Payment for Estimating. The Association has been working with the American Institute of Architects and the American Engineering Council in this and a joint report is now available. The following is the text of this report:

The purpose of this report is to acquaint prospective owners and others financially interested in building and other construction projects with the wasteful duplication and consequent expense involved in the preparation of estimates of quantities under the systems now generally in vogue.

To ascertain the cost of a construction project it is necessary to determine and compile lists or estimates of the quantities of materials and work to be done, to which are applied a price for each item. Under existing methods this work is done separately by as many contractors as are permitted to bid, and there may be as many varying interpretations of a set of plans and specifications as there are bidders.

The recommended procedure of quantity surveying described herein is intended to eliminate the present wasteful and uneconomical methods by concentrating the function of determining and compiling the quantities and list of work involved in one agency for each project. This quantity survey to be submitted to all bidders with the plans and specifications.

To Owners and Investors

It should be realized that all expenses in connection with the planning of buildings and construction are paid by the owner. Those who contemplate building know that none can afford to work without fair compensation for services rendered, but they probably do not realize that, due to practices in vogue, they pay for the cost of preparation of all bids, including that of the successful bidder. Generally speaking, it has been the practice to have the figures submitted by the successful bidder include an amount sufficient to cover the work entailed in making proposals on other work which he was not successful in securing; in short his "overhead" account is much larger than it necessarily should be—but for all this the owner pays. To eliminate the duplication of effort in estimating, thereby reducing the contractor's overhead, with attendant reduction in the cost of building, requires that all bids be submitted on the same basis and in such manner that they may be readily analyzed.

The owner should not be required to pay a contractor an overhead charge which includes any other costs than belong to his own project. It is believed that this can be accomplished by having made an itemized list of all quantities entering into the proposed work. The owner should pay for the preparation of this itemized list whether he proceeds with the building or not. It is obvious that such payment will be much less when such itemized list is furnished than otherwise, as each bidder is furnished with the list of quantities, called Quantity Survey and each bidder is thereby released from the work of separately taking off the quantities from the drawings and specifications.

A quantity survey, because it fixes definite quantities on which the bids are to be received, eliminates speculation on the part of the bidders as to the quantities involved in the project and thus makes possible lower bids due to the elimination of this "contingency."

Where the owner does not avail himself of the quantity survey procedure recommended herein he should pay for estimating work direct to selected bidders on a prearranged basis rather than have all his bids increased by an unknown amount for estimating quantities, which, frequently in current practice, the successful bidder distributes amongst the unsuccessful bidders in accordance with a prearrangement of the bidders.

To Architects and Engineers

With the idea in view of having all contractors submit proposals on a uniform basis, with some means provided whereby the amount of the proposed work will not be left to individual interpretation of the plans and specifications, it seems most desirable that all owners through their architects or engineers should have submitted to bidders with the plans and specifications a so-called Quantity Survey. To insure the result aimed at, no proposals should be considered other than those based on the quantity survey accompanying the plans and specifications. It is therefore recommended to architects and engineers that, unless eliminated for some particular reason, all plans and specifications submitted to contractors for proposals be accompanied by a quantity survey. It is further recommended that the selected bidder shall submit, before the contract is awarded, a copy of the quantity survey with each item priced

and separate items added for costs of administration, etc., the total to make up the bid price.

It is evident that before an intelligent proposal can be made upon any project, the contractor must have a quantity survey or some other statement of quantities involved. It has been customary in the past to add a stipulated overhead charge to provide for the cost of estimating and as this has been applied to every individual proposal made by the contractor, the successful bid, out of a possible fifteen or twenty, contains an item not strictly chargeable to such bid and thereby penalizes the owner. A quantity survey furnished to each bidder will reduce the cost of preparing proposals on prospective work and not only should but obviously will reduce each bid price and thereby directly lower the cost to the owner.

A quantity survey places all contractors on the same basis, which is a definite one, from which they may price or determine the proper cost of the work. Each individual item or cost as set out in such quantity survey should be a basis of determining the proper cost of extra work desired by the owner as well as a basis for credits on account of omissions; it also has the added advantage of enabling contractors to audit and prepare monthly statements, progress reports, etc.

The following recommendations are made:

1. Quantity Surveying

Architects, engineers and contractors should jointly use their efforts to have established facilities for making quantity surveys.

2. Payment for Quantity Surveying

The owner should pay for the quantity survey from ¼ of 1 per cent to 1 per cent of the cost of the project for commercial and public work and not more than twice as much for residence work, whether the project is constructed or not.

3. The Cost of the Project

The cost of the project be defined as the accepted bid, or in cases where no bid is accepted, the bid of the lowest responsible bidder as determined by the architect or engineer. However, in cases where alternate bids are required, the additional payments for the quantity survey shall be based upon the additional quantities surveyed, as approved by the architect or engineer.

4. Altered Plans

Altered plans which involve a change in quantities after the quantity survey has been made justify an addition to the original fee for quantity surveying.

5. Basis of Contract

Owners should have the option of:

(a) Making the quantity survey a part of contract, or

(b) Permitting the successful bidder, at his own expense, an opportunity to verify the accuracy and completeness of the quantity survey before the contract is signed. If he proves errors to exist in the quantity survey, the bidder shall be permitted to adjust his bid accordingly.

6. Unit Quantities and Standards

The schedule of unit quantities should conform to local customs or methods of measurement and should be so stated on the quantity survey. The eventual adoption of national standards is recommended.

7. Guarantee

The guaranteeing of quantities by a quantity survey is not recommended, for it might influence the surveyor to protect himself by increasing the quantities. The extra cost of a guarantee would not be warranted.

8. Existing Methods

The cost to owners of preparing bids by existing methods, which make necessary wasteful duplication in estimating quantities by several bidders is known to be much greater than the cost of preparing bids based on a quantity survey furnished by the owner, and therefore such existing methods are condemned and should be discontinued.

* * *

Quite So

"Enduring as the eternal hills," was the way the enthusiastic writer of advertising for a building material wrote it, but the inspired printer changed it to read: "Enduring as the eternal bills."—Improvement Bulletin.

Construction the Keynote of Prosperity and Depression

PROSPERITY and depression are the two extremes of the business cycle and between them comes the various gradations of good and bad times.

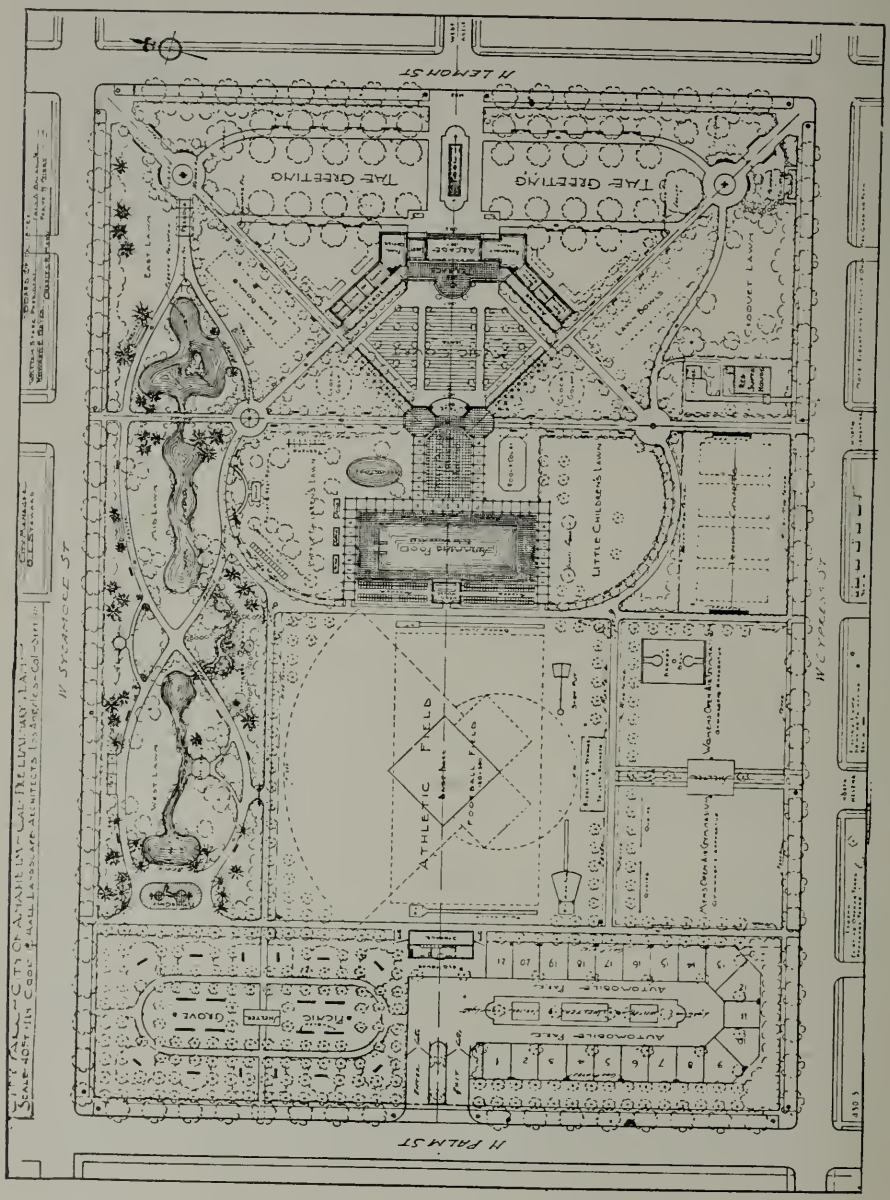
Prosperity is characterized by speculative activity, excess of demand over visible supply, expansion of banking credits and rising price level. It is in this period that construction serves as a unique barometer of the state of business and as a forecaster of trends. Circumstances encourage the erection of new plants, equipment and facilities to cope with increased demand for products; replacements are unusually heavy because of capacity production. Labor is at a premium and there is a general migration to the cities where employers welcome all who knock at their gates. New homes are necessary to accommodate the increased number of city dwellers.

But a point is ultimately reached where new construction does not pay for itself, when, weighing the prospective outlook of a few years to come with current conditions, it becomes apparent that the contemplated investment will prove unprofitable. Construction is the last to feel the effects of impending changes, however, for while plans for new projects may be set aside for a time, construction work that is already under way must be carried to completion and, therefore, the industry does not greatly suffer from the first ill-effects of the ebbing tide.

Sooner or later readjustment overtakes general industry and virtual stagnation commences to rule. Prices of commodities decline and wage costs are lowered. Public construction, such as streets, highways, sewers, etc., that has been postponed for a considerable length of time, because of the prohibitive outlay involved at inflated levels, is again undertaken, and gradually the movement extends to home and office building, as investments become more profitable through lower costs. Construction reopens the trail and other industries slowly follow along the path. Gradually business recovers and the cycle begins anew.

Thus Construction would seem to be the barometer of our industrial life. When depression strikes Construction, it rocks the entire industrial structure and "good times" undergo a process of metamorphosis which is conducive to acute conditions. But when the tide turns, Construction is the first to be carried with the rising flood, and other industries follow in its wake. It is, therefore, desirable that a better understanding of the Construction Industry and of general conditions surrounding it be had at the earliest possible moment, to form the groundwork upon which nation-wide industrial conditions may be stabilized.

The foregoing discussion shows conclusively, we think, the wisdom of placing Construction in a separate grouping, on a par with Agriculture, Manufacture, Transportation, Lumber, Mining and Trade. It is clear that in most cases Construction towers high above the others and deserves recognition as one of the predominating elements. Viewed from any angle whatsoever, sufficient justification exists for such a procedure.—Report of a Committee on Statistics, A. W. Douglas, chairman, St. Louis, Mo.



PLAN FOR A CITY PARK, ANAHEIM.
COOK & HALL, LANDSCAPE ARCHITECTS

Plan for a Municipal Park at Anaheim, California

A PRELIMINARY plan and report for a municipal park for the city of Anaheim, Southern California, has been prepared by Messrs. Cook and Hall, Landscape Architects of Los Angeles. This plan has been approved and accepted by the Board of Trustees of the City of Anaheim, and actual work has already begun. A bird's eye perspective of this Park as proposed will appear later in this magazine. The following are extracts from the report:

In a recreation and playground park such as is here proposed, to be used by old and young, with the many activities and diversions contemplated, the scheme of paths and the circulation within the park is a matter of the utmost importance. The main building group, music court and dancing patio, into all of which many people will congregate at certain times, are provided with commodious and direct paths for approach and departure. The swimming pool head house is centrally located to the athletic field, gymnasium and tennis courts; and is readily approached from outside the park by fairly direct paths in all directions. To those entering the park from the northeast or southeast corners, a choice of interesting paths is presented either directly to the dancing patio and pergola overlooking the swimming pool, or into The Greeting, with its welcoming seats between the trees; or again into the Ornamental Section in the northern part of the park and, by a curving path in the southern part, visitors would reach the tennis courts, little children's lawn, gymnasiums and bleachers overlooking the athletic field. Straight paths bounding the athletic field give good communication between the ornamental section on the north, swimming pool on the east, the open air gymnasium on the south, the picnic grove on the west, and if desired between the athletic field and the auto park on the southwest. In the ornamental section a somewhat meandering scheme of paths will tend to keep these paths free from congestion, inasmuch as the logical cross cuts are already provided for.

To visitors especially, first impressions are often the most lasting and in "The Greeting," almost six hundred feet in length, with its central panel of lawn flanked by trees, walks and seats and terminal features of interest at either end, we have called for something that cannot but be impressive as a park-like gateway to what lies beyond.

The Music Court, with its rows of fixed seats, clean gravel floor and formally trimmed trees, would slope downward from the steps at the terrace to the two inconspicuous flights of steps leading up to the stage. The stage would be elevated at least three feet and behind it a drop curtain could be lowered for open air concerts in the music court, or raised for dancing in the patio.

The octagonal shaped terminals for the flanking pergola could be curtained as dressing rooms in case of theatrical performances.

The music court would also be arranged so that open air moving picture shows could be given and the seating capacity of this music court is estimated at over two thousand, thereby making this court entirely suitable for the holding of conventions.

The swimming pool, occupying almost the exact center of the park area, is logically placed for service in accommodating those who have engaged in the active sports in the park and for those coming from outside the park to enjoy a swim. The pool has been designed to conform to intercollegiate requirements for races and aquatic sports, and to comply with the latest specifications laid down by the state board of health. It will be 50 feet wide and 150 feet long, varying in depth from two feet six inches to nine feet six inches near the diving end, where spring boards would be placed. The north, east and south sides will be enclosed by a pergola with wire netting backing, and these pergolas in connection with the dancing patio would give commodious space for those desiring to watch aquatic sports.

The water content of the pool when full would be approximately 350,000 gallons, and the water level has been established so that the overflow may feed by gravity the wading pool and system of lagoons in the ornamental section of the park. It is also proposed that the swimming pool water be utilized for a lawn sprinkler system to care for a large section of the grass areas and planting.

Two lawns for little children are provided, the one for very small children to be furnished with sand piles, teeters, swings, merry-go-rounds, wading pool and a rest house with toilet; the other, for larger children, with giant strides and other suitable apparatus, while leaving a considerable space for games on the lawn.

At various points in the open lawns of the park, lawn bowls, clock golf, and croquet are located, these being games that do not require unsightly equipment and yet furnish recreation to those who desire the quietr forms of sport. To the south of the dancing patio a sanded roque court, now rapidly growing in popularity, is located.

An area of concrete or gravel surface is planned for four tennis courts whose long axis will lie approximately north and south, the ideal orientation.

More than an acre is devoted to open air gymnasiums for men and women into which will be installed suitable gymnastic apparatus, as also space for basketball, quoits and other games.

The athletic field, lying just north of the open air gymnasiums, containing two and one-half acres to be surfaced with park gravel, will provide a baseball field, football field, running track if desired, and such field games as the pole vault, high jump, discus throwing and shot putting. At the southern end bleachers will be erected for spectators.

Further to the north and paralleling West Sycamore street will be developed an ornamental park section of several acres in which a system of informal lagoons will occupy the central part, to be flanked by lawns and naturalistic planting. Curving paths, along whose courses will be placed benches, shelter, summer houses and pergolas, offering restful seats for those desiring to enjoy the diversified outlook over park-like surroundings, are called for in the ornamental park section, in contrast to the straight paths in other sections of the park. Centrally located in the ornamental section, a Japanese garden is to be developed, while at the western extremity a large aviary is planned. This aviary will form a terminus to the vista view from the pergola at the extreme east end of the park, where one can look down ovr the extent of the lagoon system crossed by several small rustic bridges, with naturalistic water side planting and reflection values. It is suggested that an electrical fountain be placed at the eastern end of the lagoon system, and that the electric lighting of the park be of a character to make this park safe and attractive for recreation after nightfall. The walks throughout the entire park are to be of garvel with an inconspicuous concrete edging set flush with the lawn surface. With the exception of the aviary and a monkey cage, to be of good architectural design, the shelters, prgolas and summr houses in the ornamental section are to be of rustic construction so as to conform to and become part of the naturalistic planting of this section, great care being taken to avoid the grotesque type of architecture so often found in natural park-like surroundings.

In the northwest corner of the park, more than an acre and one-half is to be developed as a picnic grove and except for the central path extending east and west, is to be shut off from the ornamental park section by border plantations. The picnic grove would have an entrance on West Sycamore street and North Palm street, while if desired it can be made accessible from the auto park on the south. The spirit of this picnic grove is to give the greatest possible amount of privacy and seclusion to those parties desiring to picnicv, by having a high border plantation entirely surrounding the area and by developing numerous recesses, surrounded by shrubbery and trees, to accommodate individual parties of picnickers. For large gatherings tables and benches are located in the central panel where a commodious rustic shelter, with palm thatched roof, is planned. Facilities for cooking will be provided in this shelter, and receptacles for waste will be so located that there will be no excuse for failure to keep the surroundings neat and tidy. The existing orange trees have been made a factor in the design, making this development something that can be immediately carried out at small expense. Later, however, a taller growing type of tree with spreading branches will be planted to replace these orange trees, now to be used for immediate effect. The recesses in the planting, and the central panel would be seeded to a tough drought resisting grass or lippia, and the aim will be to develop this picnic grove in a truly park-like way, thereby correcting the faults so generally found in the average resort of this kind.

In the southwest corner of the property will be developed the public auto park, with entrance and exit on North Palm street, midway between West Sycamore and West Cypress streets. About one and three-quarters acres are comprised in this development, which it is believed will be large enough to meet the auto park needs for some years to come. Later if it becomes necessary to accommodate more visitors a portion of the picnic grove would be used for the purpose of camping out under tents. The plan of the auto park is based on giving the greatest possible accommodation to automobile parties. Opposite the entrance a building with caretaker's quarters, would provide accommodations such as men's and women's toilets, showers, set tubs for laundry, hot and cold water, storage

FIRST PRESBYTERIAN CHURCH, GLENDALE
Robert H. Orr, Architect

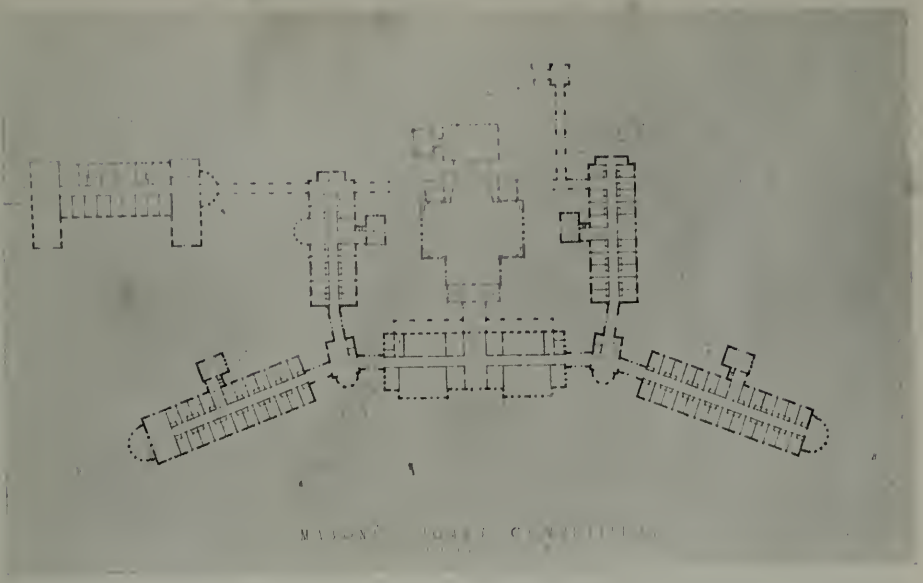
lockers and telephone booth. Twenty-one stalls, 30x40 feet, separated by rustic fences, containing gas plates for cooking, would give ample space for pitching tents and meeting the requirements of campers. The central area of the park, surrounded by the road system, will contain three palm thatched shelters with dining tables and seats, and a large fireplace in the centar lshelter will be designed for a general gathering place in the cool of the evening. The area will be properly lighted and the standard rules regarding sanitation and neatness must be maintained by the campers, who will pay a nominal charge for the privilege of using the auto park. The area will be enclosed by a heavy border plantation of trees and shrubs along North Palm and West Cypress streets, utilizing the existing orange trees for the present until taller trees can be grown, so that the residences facing on the auto park may overlook a park-like setting in so far as this is possible. The entire area will be enclosed by a wire fence with ornamental gates for entrance and exit and the park will be under the supervision of a caretaker at all times. The park as planned will accommodate 100 people comfortably, and every reasonable effort is to be made for the comfort and health of visitors to Anaheim.

The locations for drinking fountains have been carefully studied for every section of the park, to accommodate those engaged in active pursuits o renjoying the more restful recreation in the park development. The locations for benches have been studied to give those who desire to sit a great variety of outlook, whether watching the athletic games, resting under the pergolas, sitting in the ornamental section, or enjoying the recesses of the picnic grove.

A public comfort station for men and women is located near the corner of North Lemon and West Cypress streets, where these is an apparent need for such a convenience to the general public in this part of Anaheim. Toilets are to be installed in connection with the main building group, the bath houses, the athletic field bleachers, the building in the auto park (which will also accommodate the picnic grove), the rest room in the little children's lawn, and if it is thought necessary at the shelter between the open air gymnasiums.

Awarded First Prize.

BIRDSEYE VIEW, MASONIC HOMES COMPETITION
WILLIAM MOOSER, ARCHITECT



PLOT PLAN, MASONIC HOMES COMPETITION
William Mooser, Architect

Competition for Future Expansion of a Masonic Home

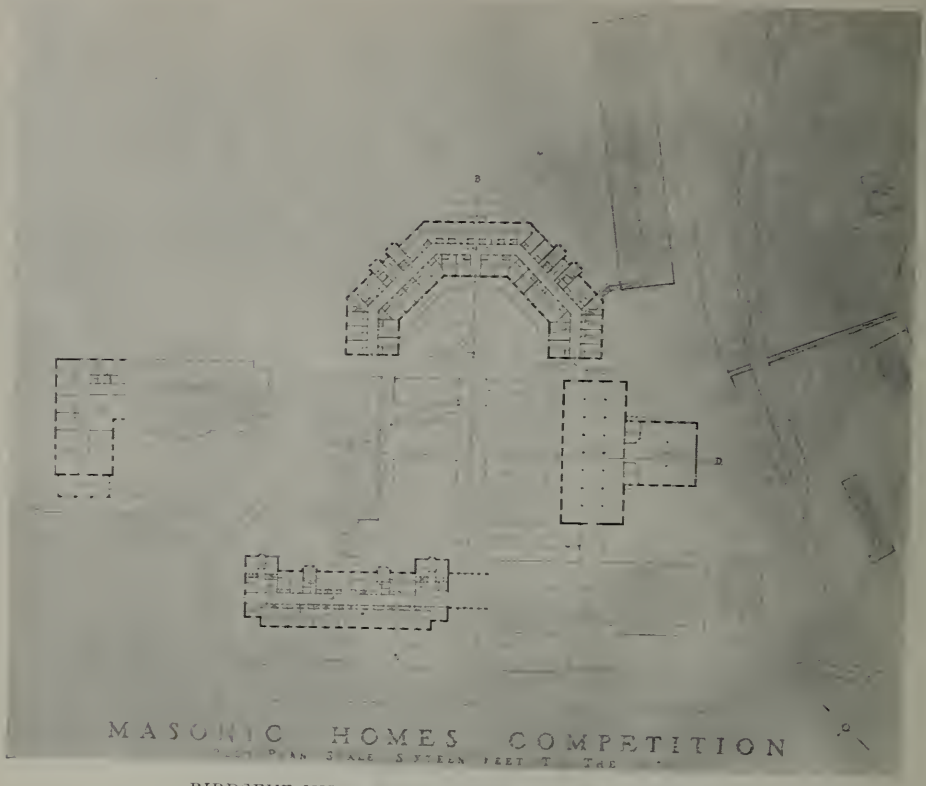
THE object of the competition was principally to submit a scheme for the future enlargement of the Masonic Home at Decoto, Alameda County, California. The site is a large one, but quite hilly, the amount of available level ground being very limited.

There is now located on the site one principal building for administration and dormitory uses, a kitchen and dining room building, a men's dormitory and a hospital. There are accommodations for approximately 150 persons.

The program stipulated that these buildings could be used or discarded in the ultimate enlargement of the institution for the accommodation of 500 people. The buildings to be erected at once include a men's dormitory for 100 beds, women's dormitory for 50 beds, enlargement of kitchen and dining room, a social hall, enlargement of hospital pavilion, and construction of connecting cloisters to all new and present buildings with the administration building.

The competition was conducted according to the rules of the American Institute of Architects, with Mr. Sylvain Schnaittacher of the San Francisco Chapter acting as architectural adviser. The jury consisted of Messrs. George F. Rodden, grand master; Charles M. Wollenberg and William R. Sherman, members of the Board of Trustees of the Home; George A. Applegarth and August Nordin, architects of San Francisco. In considering the merits of the various schemes submitted the jury took into consideration the following points, all of which were declared to be satisfactorily covered in the plans of Mr. William Mooser, winner of the competition: orientation, circulation and economy of construction. The first unit of construction, which will go forward immediately, contemplates an expenditure of $300,000.

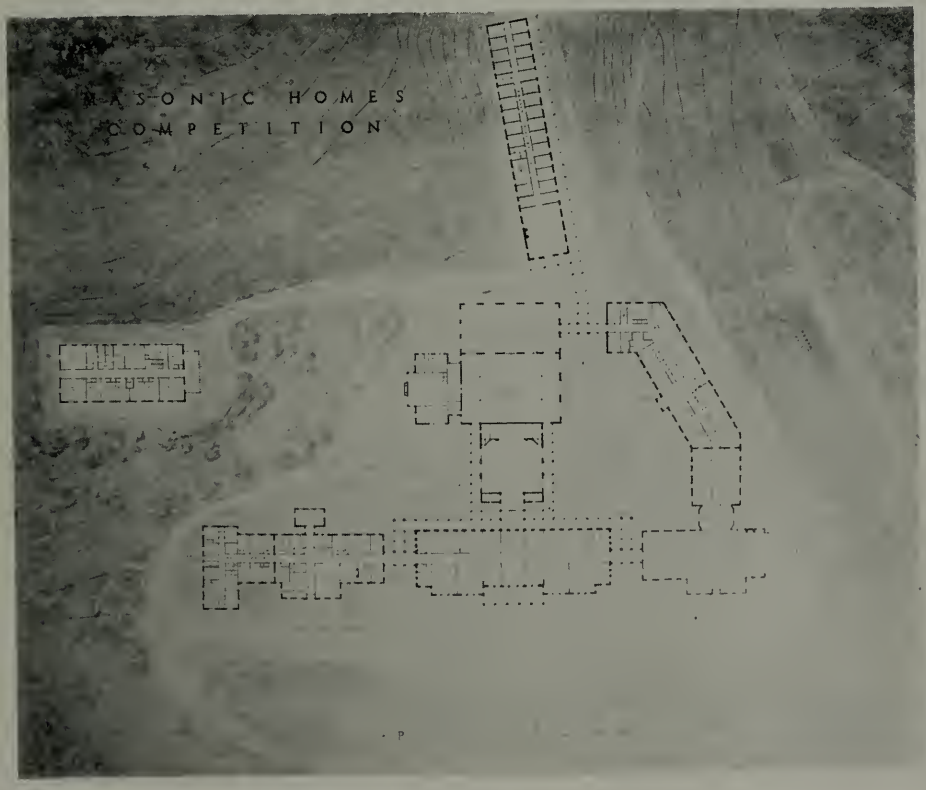
There were five competitors, all San Francisco architects, as follows: William Mooser, Carl Werner, J. W. Dolliver, Perseo Righetti and Bernard J. Joseph.



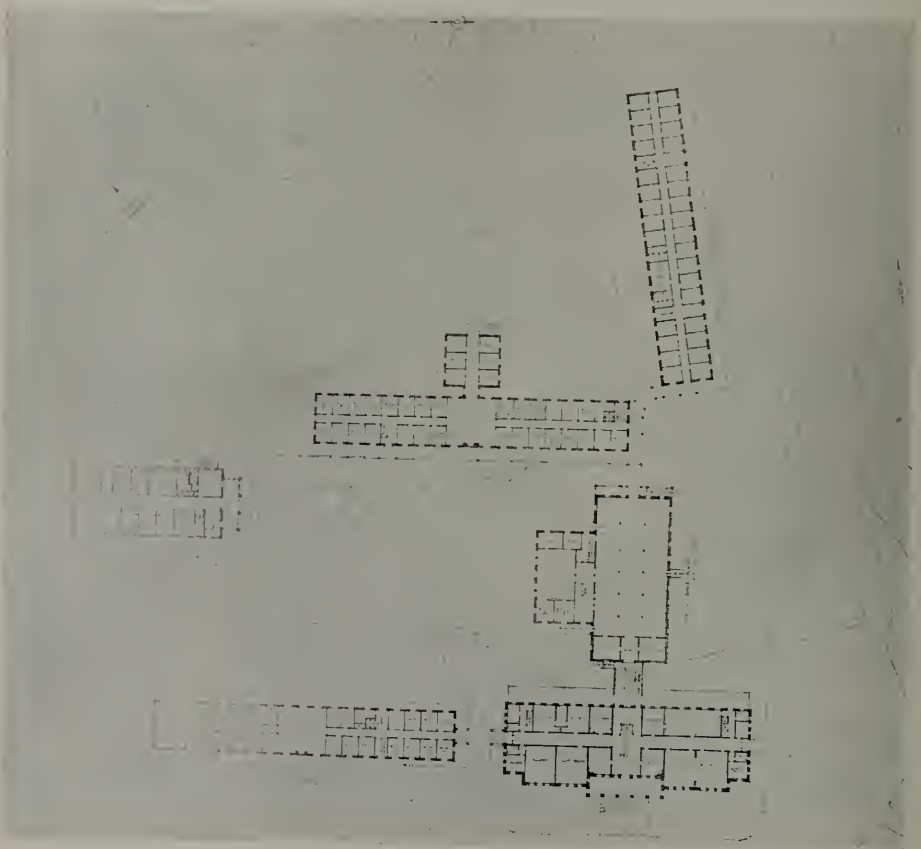
BIRDSEYE VIEW, MASONIC HOMES COMPETITION
Bernard J. Joseph, Architect

PLOT PLAN, MASONIC HOMES COMPETITION
Bernard J. Joseph, Architect

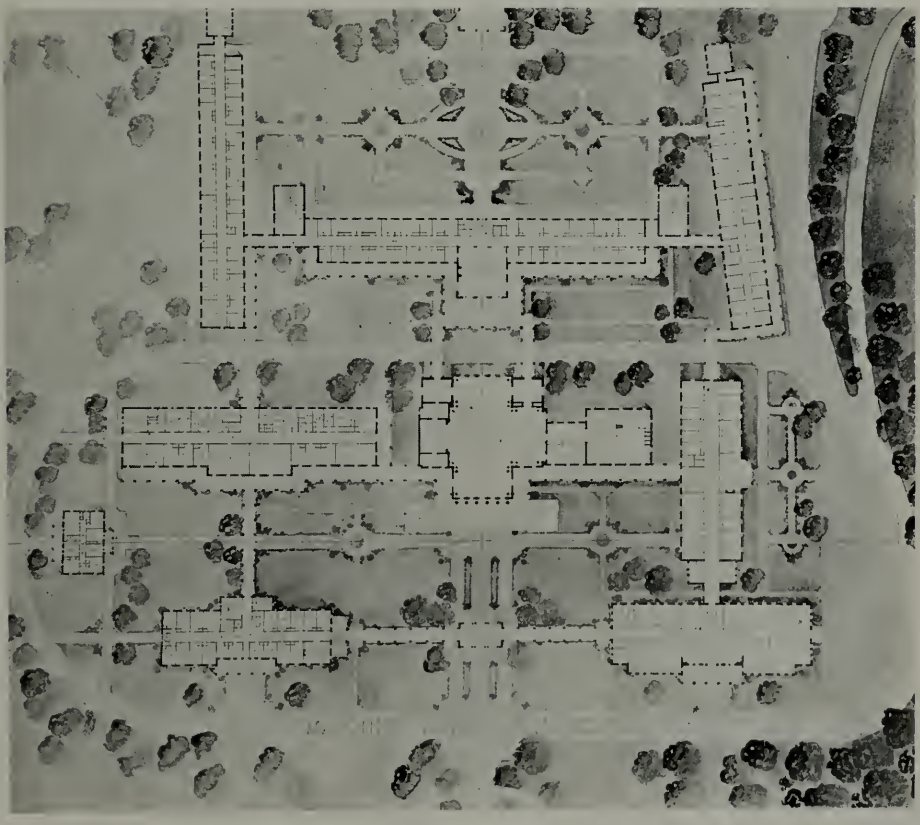
BIRDSEYE VIEW, MASONIC HOMES COMPETITION
Carl Werner, Architect



PLOT PLAN, MASONIC HOMES COMPETITION
Carl Werner, Architect

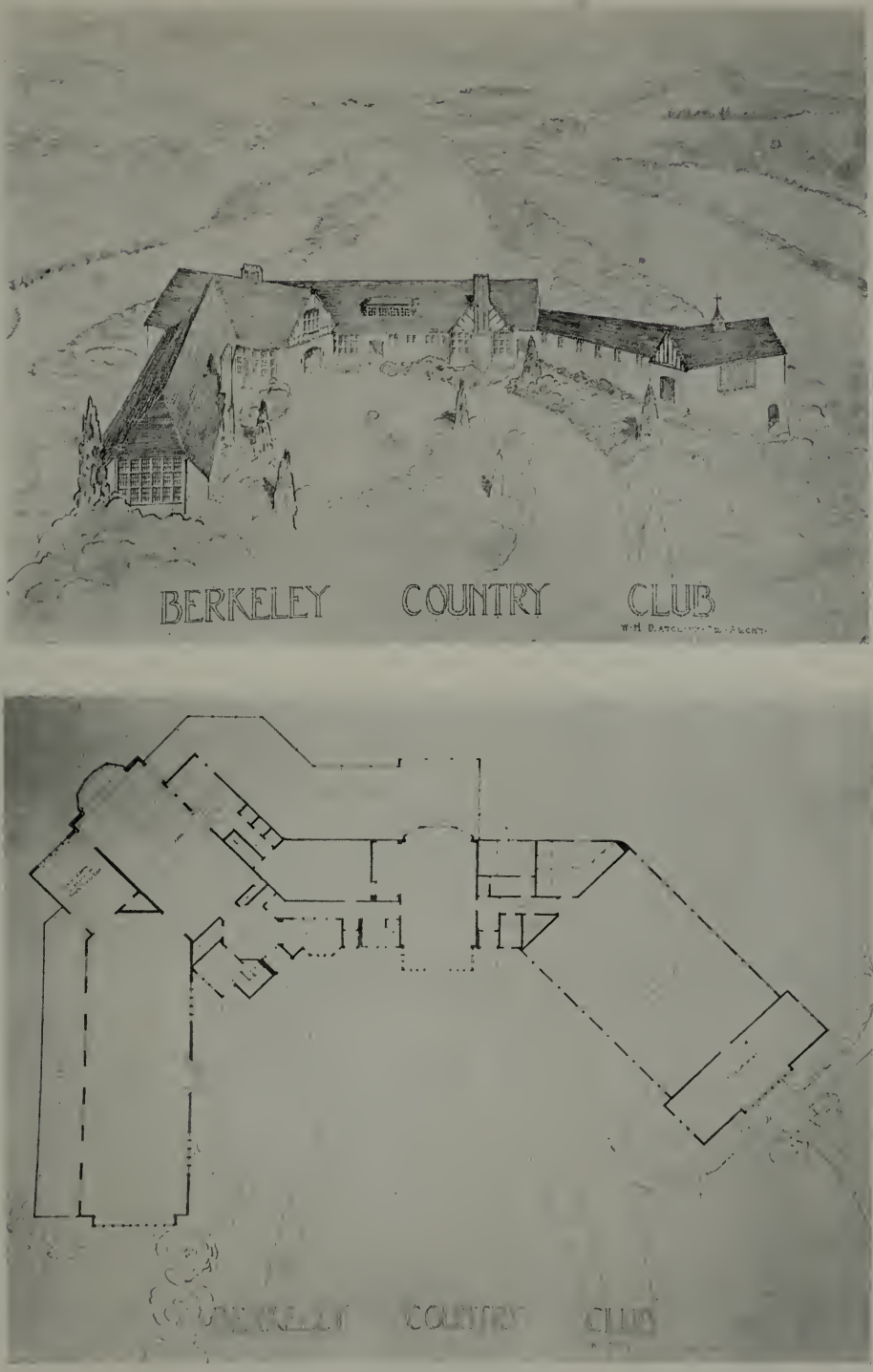


MASONIC HOMES COMPETITION.
RIGHETTI AND HIRSHFELD, ARCHITECTS



MASONIC HOMES COMPETITION
J. W. DOLLIVER, ARCHITECT

DESIGN FOR COUNTRY CLUB, BERKELEY
W. H. RATCLIFF, JR., ARCHITECT



AIRPLANE VIEW AND PLAN, COUNTRY CLUB, BERKELEY. W. H. RATCLIFF, JR., ARCHITECT

Tree Planting Along Public Highways

LITTLE attention has been given in the past to the beautifying of improved highways by tree planting. In recent years, however, a strong sentiment has developed for improvements of this kind. Some states have enacted laws authorizing such work, but in most cases it has been left to the initiative of local communities with little or no financial support from the state. Some interesting suggestions on this subject were given by Mr. F. W. Besley, state forester of Maryland, in a recent issue of Public Roads. He says:

"In undertaking the planting of trees along the highways, there are certain conditions peculiar to the work that must be given due consideration before any plan of planting will succeed. In the first place, traffic conditions—both the present and the probable future conditions—must be given proper weight. This means that in planting, sufficient room must be allowed for widening the roadway to carry the traffic safely for the next 50 years. On the main highways this generally means that the trees should not be planted closer than 25 ft. from the center of the surfaced roadway. On subordinate roads it may be practicable to plant them a little closer to the center, although the 50-ft. spacing should be observed as far as possible. This permits of a reasonably wide road surface and the necessary room for drainage. Frequently the established right of way of the road is less than 50 ft. in width, in which case complications may arise in dealing with the landowners along the highway. This has been found to be a source of considerable difficulty. Where the road is simply a right of way for public travel and the fee in the land rests with the adjoining owner, the planting of trees may be entirely prevented by such owners. Furthermore, if the trees are not planted within the right of way of the highway, they can not be fully protected, which presents further difficulty.

"The chief opposition to tree planting comes from farmers. They object to the planting of trees along the highways adjacent to their fields because of the effect of the trees in shading the ground and in extracting moisture and soil fertility from the surface under and adjacent to the trees. While this is true of many varieties of trees, there are others, such as the locust, walnut, persimmon and coffee trees which interfere with cultivated crops to a very small extent only, if at all. The proper selection of trees for the different conditions and localities would, it is believed, overcome this objection.

"Another obstacle advanced against tree planting is the existence of pole lines along the highways, carrying telephone, telegraph, and electric-light wires. Trees planted along the highway will come in contact with these wires in a few years, and from that time on there will be a conflict of interest, in which either the trees or the wires must give way. Where the road is wide enough it may be possible to plant the trees a sufficient distance from the wires, so that they may be trained above them. Where this is not possible the wires may be carried through the trees in cables, without serious injury to the trees, as is being done in many of the smaller cities. Eventually, the wires may be carried in underground conduits, as is being done in the case of some of our long-distance telephone and telegraph lines, or they may be carried on poles erected on private rights of way outside of the roadway. If we want trees along the highways, and our desire is sufficiently strong, we will have them, and such obstacles as the pole lines will be removed. There should be a general

recognition of the principle that the planting of trees along the highways is part of the improvement of the highway, required for comfortable travel and pleasing outlook. The objections mentioned are not by any means insurmountable.

"The real obstacle that has prevented earlier attention to the condition of our roadsides has been the lack of a public appreciation of the aesthetic and practical advantages of shade trees. As a consequence the necessary funds are lacking to carry on the work of planting. There is great hope that this condition will soon be corrected and that an awakened public interest will lead to the appropriation of the money that is needed. Perhaps no one factor has contributed more to this awakening than the influence of the thousands of men who went to France and witnessed the splendid work the French have done in beautifying their highways.

"To follow the example that the French have set us, however, we shall need more than money. That is the first need; but equally important is the necessity for the creation of a state agency to plan and supervise the planting. Without such an agency the development of a uniform plan for the state will be difficult, if not entirely impossible. Some of the states have already provided the money and others have created the machinery for the planting, but it so happens that none has given the necessary attention to both requirements.

"For a part of the money needed we can undoubtedly look to the many patriotic organizations, such as the Daughters of the American Revolution, the Grand Army of the Republic, and the American Legion. No memorial to our fallen heroes and to those who served the colors in our wars could be more fitting and more beautiful than avenues of trees along our highways. In Maryland it has been proposed to honor in this way not only those who gave their lives in the World War, but also each son of the state who answered the country's call for service on the fields of France. If the plan is carried out as it has been proposed there will eventually be one tree which will be named for each man and woman who served in the army or the navy and the Red Cross and other auxiliary organizations as well.

"Many of our towns have found that a tree-lined road gives the traveler a wonderfully good impression of the good taste and public spirit of their citizens, and they will undoubtedly be willing to raise a part of the cost of planting along their main approaches.

"With an almost endless variety of trees from which to select, there is a kind of tree for every place, and there is no condition of soil in which some tree will not grow and thrive. We have most abundant resources to draw upon, and with the rapidly growing public sentiment in favor of the work, roadside tree planting is destined to move forward rapidly within the next ten years."

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Rightly Named

"I don't see why you call your place a bungalow," said Smith to his neighbor.

"Well, if it isn't a bungalow, what is it?" said the neighbor. "The job was a bungle, and I still owe for it!"—Pearson's Weekly.

About Bay Windows

ALTHOUGH formerly used almost exclusively in the dining room, the bay window has so increased in favor that many architects are using it in almost every room in the house. A bay should always be placed in the center of a room, writes Mr. A. Benton Greene in National Builder.

There are as many shapes to the plan of a bay window as there are combinations possible of straight lines and curves. They may be rectangular, elliptical, circular or polygonal in outline. The general character of the design of the house, as well as the taste of the designer determines the final shape the bay will assume.

Whatever shape it may take, it must be fitted with windows. These may be double hung, casement, pivoted, or fixed. Sometimes a casement window is placed in the center and fixed windows at the sides. There is nothing arbitrary about these arrangements. Climatic conditions, exposure, the wishes of the owner and the inclination of the architect, are the deciding factors.

Bay windows are generally glazed with plain plate glass. Occasionally stained glass is used. Art glass, leaded, is a very popular form of decoration. These leads form a pattern more or less ornamental and hold together the plain glass.

The design of a bay window must harmonize with the general architectural character of the house, interior as well as exterior. On the exterior, the cornice of the bay, for instance, should line up with that of the porch; the water table of one should be contiguous with that of the other, and so on. On the interior, the height and treatment of the windows, of the panels and of all other features should correspond and be in thorough harmony with the design and decoration of the rest of the room. In short, a bay window should not appear as an excrescence, something "stuck on." It should rise naturally out of the design of the building and with it form one homogeneous, attractive mass or unit.

A bay window adds health, sunshine and comfort to a room. It permits of the introduction of many more windows and affords the opportunity of building in seats, cozy corners and other desirable features.

* * *

Yuletide

We wish every one who reads The Architect and Engineer a "Merry Christmas and a Happy New Year." The formula for a merry Christmas and a happy New Year is simple, and it may be followed by every one. The surest way to have a merry heart at Christmas time is to make some other heart glad, and the surest way to realize a happy New Year is to make others happy. Observe this simple and time-tried formula, strive to make those about you glad and happy, and our hearty wish will be to you much more than an empty, conventional phrase.

* * *

$2,000,000 Warehouse Terminal

The California State Harbor Commission has called for bids for the construction of the new China Basin terminal at an estimated cost of $2,000,000. The terminal will include the largest warehouse on the Pacific Coast and in point of equipment will excel anything now existing in the United States.

Some Tile Problems of the Architect*

By D. KNICKERBACKER BOYD, Architect.

LET us begin by clearing up the mystery which has surrounded the grading of tile by having it thoroughly understood that the three grades, in white glazed wall tiles, are not the result of any intent of the manufacturer to produce different qualities. It is surprising how many architects and others do not realize that tiles are not manufactured in predetermined grades and qualities, but that the grades result from the selection made in the product which the manufacturer has tried with all the materials and forces at his command so to make and burn as to produce but one grade, the highest quality obtainable.

Architects and their clients, and in fact all users of tile, must be informed that, due to limitations and firing conditions, certain variations in shades, sizes, etc., are inherent in the manufacture of clay products.

The recent adoption by the manufacturers of the classification "selected," "standard," and "commercial" will go a long way to help us all to secure the tiles intended. In the past even a person of limited means has objected to the term "second quality," when as a matter of fact the tiles heretofore designated by that unfortunate name were most suitable for him.

On the other hand, it would be equally unfortunate to specify for such a building first quality tiles only, free from all blemishes and defects, yet such has been a very general practice due to lack of knowledge.

I am sure, too, that almost all architects, if they knew of the great amount of time which is spent on the mere "shading" of glazed wall tiles, would feel as those do to whom I have made the fact known, that every encouragement should be given to the use of "run of kiln" tiles, so far as color is concerned.

The time and effort now spent on shading could thus be given to more creative effort—an end most devoutly to be sought. And in the opinion of many of us the result would be much more satisfactory from the point of appearance alone, removing at the same time much of the mechanical effect obtained when all tiles are uniformly white.

It is very important, it seems to me, that some simplification of titles and names be considered to make them more significant of characteristics, colors, and proper uses. There are now too many names for kinds. With fewer basic names, no matter how many trade names might be given by manufacturers, this part of the architect's problem would be solved.

Take for instance vitreous and semi-vitreous as words to conjure with. In most instances the same kind of tile is either vitreous or semi-vitreous, but none seem to know the relative difference in hardness, absorption, or reasonable appropriateness for exposure or use as between them; and few know that the only reason why a semi-vitreous tile is not vitreous is that the nature of the materials used to produce certain colors (red, brown, chocolate, and black) is such that it is impossible to burn them to the same degree of hardness without destroying not only the color but the body of the tile as well. It is very simple once it is known.

But take the same vitreous and semi-vitreous and consider them from the standpoint of size, and it appears that if the size is smaller than 1¼ inch the tiles are known as ceramic mosaic. Between that size and 3

*Extracts from an address before the convention of the Tile and Mantel Contractors' Association.

inches the same kind of tile is known as floor tile. From that size up to 6 inches if the tiles are vitreous they are known as flint tile, but if semi-vitreous they are known as floor tile. And all the while we have with us the quarry tile in sizes both under and over 6 inches, and all semi-vitrous.

Surely it is up to the industry and the tile contractor to make all simplifications possible, and to put out this information for the benefit of architects and users. Through cooperation we will likely accomplish great results in that direction, but let me say that in the meantime it is my belief that these complications and lack of information have deprived architects of the opportunity to take fullest advantage of tile, through the erroneous impression that but three general classes of tile were available and only the first named two in "regular" colors and but few standard sizes, namely:

White tiles for bathrooms, toilet rooms, lunch rooms, barber shops, drug stores, etc., in bright and dull glazes and not in small sizes, for walls; unglazed or vitreous tiles, not in large sizes, for floors—and the latter, when not white, furnished in fixed atrocious combinations of pattern and color;

Quarry tiles and light or plain colored unglazed tiles for floors, and

Faience or decorative tiles, in which class were thought to be included all those attractive colors and units to be seen in hotels, libraries, clubs, fine residences, and similar buildings—the belief in most cases prevailing that the tiles in each of such installations were especially made to fit each pattern or design and consequently involved considerable cost, and hence were to be avoided for ordinary usage.

Architects are designers, but before they can design they must have complete data as to the materials with which they are to work out the design—should know source, production, and characteristics of tile, and colors and sizes should be readily obtainable.

Take for instance the white glazed wall tile, for which I have made the plea for variety in shading. An architect, desiring to design sidewall treatments with flush panels formed by "header" effects or "rowlocks," or desiring to use a "soldier" course with small bands, intending for good reasons to tile the wall to the ceiling instead of using a wainscot, consults the white tile list, and finds that apparently nothing is made in this class of tile, whether bright, semi-matt, or matt glaze, smaller than 4¼x2⅛ inches.

He probably gives up his idea of securing original effects in the case intended and specifies the usual wainscot with the usual stereotyped field of 3x6 or 6x6, or he may risk what seems to be certain increased expense and use a 3x3 or 4¼x4¼ square with any one of the 57 varieties of caps made before the present standarization program was inaugurated.

He may have noticed in the list of enamel tiles some small sizes very suitable for his design if they could be had "self-colored" with the wall, but as he does not want them in any other color his determination to stick to the conventional "wainscot" increases.

Now what are the facts? I asked the secretary of the Associated Tile Manufacturers why these small sizes were not made in the white tiles and he said they are. I showed him the list of white sizes and he said that small sizes take the enamel list.

And there you have it in a nutshell—all right from the industry standpoint, but where do the specifier and the user come in? They are left absolutely in the dark just because it happens that colored tiles naturally

cost more than white tiles and that small tiles cost more than large ones. The cost being the same, they have heretofore both taken the same list.

And while of course architects want to know relative costs, they have been deprived all these years of the knowledge that they can really design in white tiles, the small units being available in 6 inch, 4¼ inch, and 3 inch lengths down to half and quarter inch widths, with a range of intermediate sizes.

With faience work and with tiles which are made to conform to special locations and designs, the situation is of course different, even though here the desirability of complete information is apparent.

But where the information is most sadly lacking is with regard to that class of tile at once colorful, durable, and impervious (if not always entirely vitreous), with or without glaze, and if with glaze containing texture and but little gloss—that class of tile which is commercially available in every desirable color and necessary size and shape to accomplish every effect desired by a capable designer. And here is the material and here is the man, each waiting to be made better acquainted with the other to the benefit of both.

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1920 Year in Timber Preservation

The most notable progress yet recorded in the pressure treatment of timber to prevent decay was made in 1920, according to a report recently issued by the Service Bureau of the American Wood-Preservers' Association.

The report states that the 112 active pressure wood-preserving plants scattered throughout the country used in 1920 fifty million pounds of zinc chloride and sixty-nine million gallons of creosote oil for the treament of over two billion board feet of timber.

The treated material consisted mainly of railway ties, construction timbers for wharf, bridge, highway, mining and building purposes, piling, telephone and power poles, fence posts, wood blocks for street paving and for factory floors, and lumber for miscellaneous uses.

Decay, which can be prevented by proper preservative treatment, destroys more wood annually than any other agent. The desire for permanence at low cost is given as the reason for the increased demand for well-treated timber.

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A Bricklayer's Paradise

From San Diego, California, we have word that there have been no brick laid there since July 1, as the bricklayers have been holding out for $12 per day wages. The contractors decided to cut these wages to $10 per day, so the men went out, leaving Government as well as private work without a bricklayer.

The matter, however, now appears to be shaping itself up so that the men will go back to work at the 10 scale, for unless they do so, it is quite probable that bricklayers from San Francisco, who are willing to work for this wage, will be brought in.—Exchange.

Architectural Ornament in Reinforced Concrete Buildings

ARCHITECTURAL ornament is discussed by Mr. Frank H. Heaven in an article in Concrete and Construction Engineering, England, on "The Effect of Reinforced Concrete Upon Architectural Design." He says:

It may be thought, perhaps, that reinforced concrete can have little or no influence upon the architectural ornament of a building, but its employment might greatly add to the grace of our building by producing a greater degree of light and shade upon elevational design by giving a large projection to strings, cornices, etc. The limits of stone or other granular material when in projection are well known, but ornamental reinforced concrete work could be employed to advantage where other materials fail. The Greek temples of old owe a great deal of their charm to the effects of light and shade cast by their projections. The sun, however, does not treat all lands alike. In Southern Italy the proportioned cornice of the Orders produced the desired effect by reason of the high altitude of the sun, but the use of the same projection in England has an altogether different effect, due to the lower angle at which the light from the sun can produce shadows. Many of our monumental buildings, for that very reason, are almost shadowless. The architects of the Renaissance in Northern Italy recognized this fact and crowned their Palazzi with great overhanging cornices. The Americans, too, have seen the necessity for a deep shadow to give repose to their large scale buildings and obtain the same by the use of zinc or iron cornices of great projection, painted to imitate the material in which they are working. The use of reinforced concrete in decorative cornices would be legitimate construction if we recognize the material and give the members its true value in relation to the whole design, and the deeper shadow cast by greater projections on our building would be appreciated.

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National Safety Council Urges Greater Precautions Against Accidents

The following resolutions were adopted at the tenth annual congress of the National Safety Council, which was held at the Massachusetts state house in Boston recently:

Whereas, The 80,000 accidental deaths and millions of injuries occurring each year on the streets, in our industries, in homes, and elsewhere more than twice the number of all American casualties in the great war are a blot on our civilization; and

Whereas, National experience has demonstrated that 75 per cent of industrial accidents are preventable; experimental campaigns in seven cities have resulted in the reduction of public accidents by 25 to 40 per cent and further efforts will undoubtedly result in even greater progress; and

Whereas, The direct economic cost of accidents in industry alone exceeds one billion dollars annually, and greater indirect losses are caused by the curtailment of production and lowering of morale; therefore, be it

Resolved, That the National Safety Council at its tenth annual congress in Boston assembled, advocates:

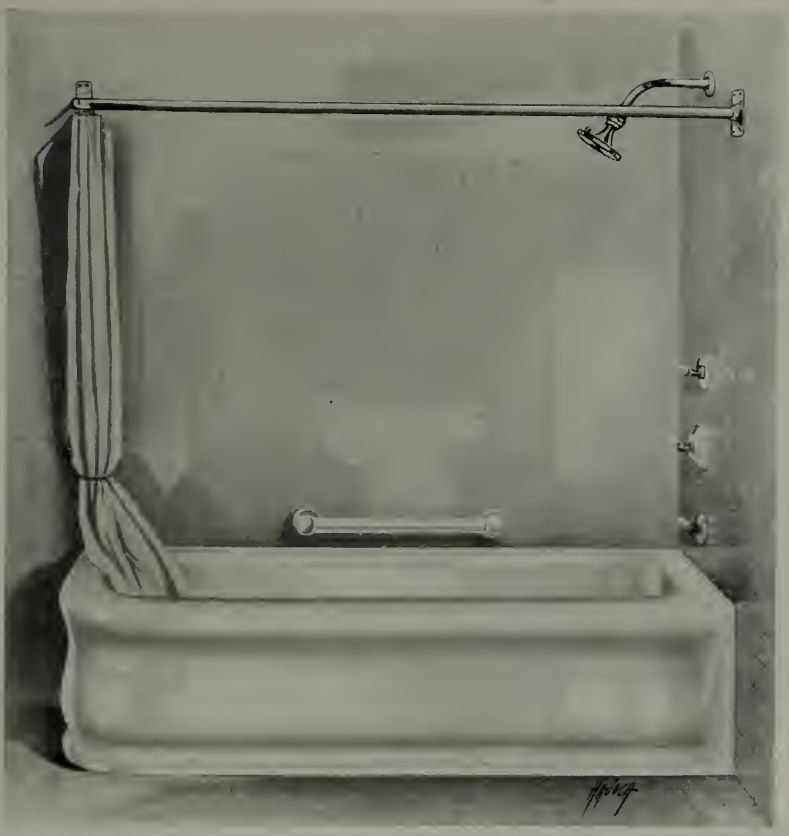
1. The safeguarding of all dangerous machinery and places according to methods that have been found practical and effective.

2. The redesigning and reconstruction of factory equipment when necessary and the improvement of dangerous processes for the purpose of removing the accident hazards, and at the same time increasing industrial efficiency and lowering cost.

3. The education of all workmen and their supervisors in safe methods and habits of work.

4. The safety education of all school children, as well as students of our colleges and universities, both for their own safety and to stimulate interest in the conservation of life and a better citizenry; and

5. The mobilization of all community forces, including city and state at safety councils for intensive and permanent campaigns against accidents of all types.



PRACTICAL ARRANGEMENT OF SHOWER OVER TUB

Sanitary Plumbing in the Home*

By ARTHUR J. PHILLIPS.

BROADLY speaking, plumbing in the modern home depends upon an incoming flow of water through a network of supply pipes to a series of plumbing fixtures, such as baths, showers, lavatories, etc., and the outgoing of the same water through another network of waste pipes after the water has fulfilled its mission of cleansing or flushing.

Usually the water is brought to the curb of one's property through the municipal water pipes, although in some localities and districts private domestic water supply systems are used. The municipality, likewise, through its system of street sewers, relieves the property owner of all responsibility for waste disposal after the water has passed the house drains; although in some localities lacking such sewer systems, the owner has recourse to private septic tanks as the solution of his waste disposal problem.

In this article, it is assumed that a copious supply of pure water will be admitted through the curb box into the various supply pipes to bath tubs, shower baths, lavatories, closets, kitchen sinks, and laundry tubs

*First of a series of four articles dealing with various phases of modern plumbing, and especially prepared for this magazine by the author. The second paper will appear in the January number. Illustrations by courtesy of Haines, Jones & Cadbury Co.

UTILIZING EVERY INCH OF SPACE TO GOOD ADVANTAGE

AN IDEAL BATH ROOM

THE "BUILT-IN" SHOWER WITH GLASS DOOR

and that the supply pipes to these various fixtures will be equipped with stops or shut-off valves so that the water supply can be shut off from any one faucet or valve for repairs without interrupting the service to other fixtures in the house. We likewise assume that the house and each fixture in it will be properly trapped to prevent the entrance of sewer gas and that all pipes running to or from the house will be entrenched deep enough to be unaffected by frost conditions.

As the bath room is so intimately connected with the health and well-being of the home, every consideration is now usually given to its sanitary appointments. The built-in bath has distinct installation and sanitary advantages and in consequence this type has grown rapidly in popular favor. The built-in type is made without seams, and when tiled in it presents a smooth, unbroken surface without spaces back or underneath to harbor dust or moisture. This type can be obtained to tile into a recess with supply and waste fittings installed at the side or back wall or into a right or left-hand corner with the supply and waste fittings installed at the exposed end or in the end or back wall or tile into the back wall only with both ends of the tub exposed and the supply and waste fittings installed at either of the exposed ends or in the back wall.

THE SQUARE PEDESTAL LAVATORY

There is another reason for the popularity of this type. It makes an excellent receptor for shower bathing and permits even in a bath room of limited space the

WHERE IT IS ESSENTIAL TO KEEP THE COST DOWN

adoption of a bathtub and shower bathing at a slight additional installation cost for the shower and without requiring any additional room for the shower enclosure. In connection with the shower, the lightest weight curtains are recommended, preferably those made of sateen; as this material is light and does not absorb much water, it drys rapidly and takes up very little space. Shower heads five inches in diameter and throwing a fine rain-like spray are usually chosen, and an arm bent at 45 degrees with an adjustable ball joint permits arranging the shower so that the stream can be deflected without wetting the hair—a feature appreciated by women who enjoy shower bathing.

For bath room beauty and stateliness, the vitreo china square lavatory supported on a square pedestal without flutes has won wide popular favor. This material with ordinary care is practically imperishable and indefinitely retains its fine lustrous surface and sanitary advantages. Lavatories of this design are usually equipped with a concealed supply nozzle, through which water tempered to suit personal requirements may be drawn, and so enabling users to wash in running water if desired.

Small separate dental basins, made of the same high-grade material, are likewise growing in popular favor for private bath rooms. Such a fixture insures cleansing of the teeth and oral cavity under ideal hygienic conditions.

Certain refinements, like dressing tables and low-back chairs for hair dressing, are now considered essential in the well ordered bath room. Nor should a generous supply of accessories, consisting of grip bars, soap cups, towel bars and racks, medicine cabinets, tumbler holders and receptacles to hold soiled towels, be overlooked in the final appointment of the

bath room. Oftentimes a judicious selection of such accessories adds valued features of completeness and convenience at an extremely low cost.

Exacting care should be used in selecting the water closet for a bath room. This fixture is indispensable and should measure up to high standard. Its first requisite should be a complete and speedy elimination of waste at each flush. The flushing operation and the refilling of the tank should be as noiseless as possible and the supply pipe to the closet tank and waste line from the closet bowl should be carefully installed to help the quiet flushing of the fixture.

The tank mechanism, moreover, and the closet bowl should give this efficient and quiet service at the minimum consumption of water. Some manufacturers have made excellent progress in perfecting quiet flow closets and these outfits are well worth the slight difference in cost over the noisy and water-wasting types.

In the long run, the best made plumbing is likely to be lowest in cost, despite the higher original price paid for the better grade. Good faucets, heavy traps, well-made lavatory supply valves and fittings, finely adjusted shower mixing valves and other working parts in a bath room require less time for installation work, insure service under most favorable conditions, do not easily get out of order, and are less likely to cause interruption for repairs.

* * *

How Our Forefathers Built

DURING the twelfth and first half of the thirteenth century the houses of the great mass of people were little better than hovels, the walls consisting for the most part of timber framings filled in with mud and straw. The houses were low, being only one story in height and covered with a thatched roof. Closely packed together as were these houses and without chimneys, splendid material was provided for a fire. The first attempt at forming building regulations was due to a conflagration.

These advocated the building of party walls 3 feet thick and 16 feet high. Compliance was voluntary, owing possibly to the fact that these recommendations were drawn up at an Assize of the Citizens of London, who did not feel enthusiastic about a matter that would have put them to expense. One clause was to the effect that if a man wishes to build such a wall, and his neighbor would or could not assist in the building, the dissentient had to supply the whole of the land, but had the right to support his timbers upon the said wall. Very little voluntary action accrued, however, so that after another large fire in 1212 the citizens again assembled and passed stringent compulsory regulations for the safety and convenience of the inhabitants. Many clauses were framed dealing with party walls and recesses therein.

The draining of the room received a good share of attention. Provision had to be made for the effective removal of rainwater in such a manner that a neighbor's property was not rendered liable to suffer injury. Tiled roofs were advocated, but were not compulsory. Rush and reed coverings in an exposed state were condemned, and all such coverings were to be plastered within eight days. The penalty for non-compliance was the demolition of the house.

A rather amusing clause, and one that throws a good deal of light upon the functions of the aldermen at that period was that aldermen were to carry a cord with a hook attached, and were invested with the

power to pull down by its aid any house attacked by, or liable to attack during a conflagration. This also helps one to form an estimate as to the character of the houses, and one can only conclude that they must have been of a rather crude form of construction.

At this Assize the rate of pay for the ensuing year for carpenters, masons and tilers was also fixed. The amount was the same for each trade. It was 3d per day with keep or 4¼d per day without keep.

Great advances had been made in the various building trades by this time. Specialization had become a force dividing up industry in all directions. Masons were divided into two classes at least, namely, cutters and sculptors of freestone and layers and setters. Bricklayers, or men called such, were not known; but as there was in use at this period a small kind of brick, imported probably from Flanders, and as records of building including bricks in their structure contain reference to tilers, there is no doubt that bricklaying was executed by these men.

Plasterers are mentioned; also mudstickers, who filled in the framework of houses. In the less skilled division are such distinctions as barrowmen, laborers and excavators.

The joiner is not mentioned, perhaps he had not put in his appearance. When he did, there arose several occasions when the members of each craft indulged in a resort to physical force to settle points of etiquette concerning their crafts.

It was about the year 1230 that joinery work came into vogue in England, and, of course, the king's establishments were the first to be improved. The royal bailiffs and master carpenters in the king's service must have had a very trying time judging by the records still existent. Scattered about the country were about thirty royal residences, each of which had to be brought up to date. Besides these, the king seems to have exercised in a thorough manner his royal privileges by ordering alterations and improvements wherever he was likely to stay or stayed during a journey.—Building Review of New Orleans.

* * *

Boiled and Raw Linseed

Pure boiled and raw linseed oils have the same degree of purity and are both high grade paint oils. They have somewhat different uses, depending upon the fact that they dry in a somewhat different manner. Raw linseed oil must have a dryer added, and it dries smoothly and evenly, hardening the film clear through to the under surface.

Boiled linseed oil has the dryer cooked into it, and no extra dryer is needed. It seems to dry more quickly than raw linseed, but the apparent drying is a surface effect, the paint becoming dust free rather quickly, but the oil remaining somewhat soft underneath because of the harder surface skin. Boiled linseed does not dry to the under surface and fully mature as quickly as the raw oil. The boiled oil contains more free fatty acid than the raw.

For all ordinary outside painting on wood, raw linseed oil is preferable. It gives better penetration to the priming coat, reduces the tendency to "check" and "alligator," and wears as well or better than the boiled oil.

On the other hand, a paint film in which boiled oil is used is softer and more elastic than one made with raw oil, and for this reason boiled oil or a mixture of boiled and raw oils is especially suitable for painting metal surfaces where the expansion and contraction are comparatively large. Boiled oil is also desirable for the priming coat on plaster, cement or concrete, because the large amount of free fatty acid tends to combine with and neutralize the lime in the material painted, and because it seals up fire cracks.—The Dutch Boy Painter.

Department of Safety

Conducted in the Interests of the Building Public and with the Co-operation of the California Industrial Accident Commission

Divided Responsibility of Two Foremen Causes False-work on a Bridge to Collapse

By J. J. ROSEDALE, Construction Engineer.

THE largest coal handling bridge in California was recently constructed in Alameda. A heavy wooden trestle was erected to carry safely the structural members, tools, material and workmen during the course of construction.

While the heavy and dangerous work was going on, namely, that of constructing the false work, hoisting and riveting the structural members, practically no accidents occurred on the job. When the bridge was completed it became necessary to take down the false work. Two foremen with equal responsibility were then placed in charge of the work. The contractor gave one of the foreman orders to lash the bents to the main girders of the bridge before taking down the bracing. This order was not transmitted to the second foreman or to the men, and consequently, the bracing was removed

COLLAPSE OF FALSEWORK OF COAL HANDLING BRIDGE, ALAMEDA

first, which caused the bents to collapse. One structural iron worker was killed and one of the foremen temporarily injured .

The cause of this accident was primarily due to the fact that two foremen were placed in charge of the job with equal authority, and each one depended upon the other to give orders to the men. This accident would probably have been avoided if only one foreman had been placed in responsible charge of the work.

* * *

A Boiler Explosion

By B. M. EVANS, Boiler Inspector.

ON July 27, 1921, about 9:45 p. m. a H. R. T. boiler exploded in the oil field near Taft, instantly killing one man and doing considerable property damage.

The exploded boiler was one of a battery of three. It burst on nearly a straight line from end to end on top of the shell through the center of the dome. The upper half of the front head was doubled outward, and the rear head was practically quartered, all parts being doubled outward. The

FIG. 1—VIEW OF NUMBER 2 AND NUMBER 3 BOILERS

diagonal braces were torn from the shell and the heads on both ends, and the shell plates were straightened out nearly flat. The dome burst full length on one side on line with the center of the boiler. The dome sheet straightened out flat, and was blown a distance of about 900 feet. The dome seam, where riveted to the boiler shell, failed between the rivets. The dome head was not found. The remains of the safety valve were found near the dome. The stop valve could not be located.

Fig. No. 1 is a view of number 2 and number 3 boilers. Note that the boiler house, of corrugated iron construction ,was completely demolished,

as was also the safety valve and pipe work of number 2 boiler. The safety valve was blown a distance of about 100 feet .

Fig. No. 2 is a view of the exploded boiler. There were no indications of overheating or corrosion. All seams, except parts of the head seams, remained intact.

The exploded boiler was being fired up to put into service. From all indications, the safety valve failed to open, as the remains of the safety valve were badly scaled, causing the pressure to reach the bursting point of the shell.

It is my opinion that the fracture started at the dome, causing a greater shock than the shell plates could stand. All fractures appeared to be clean

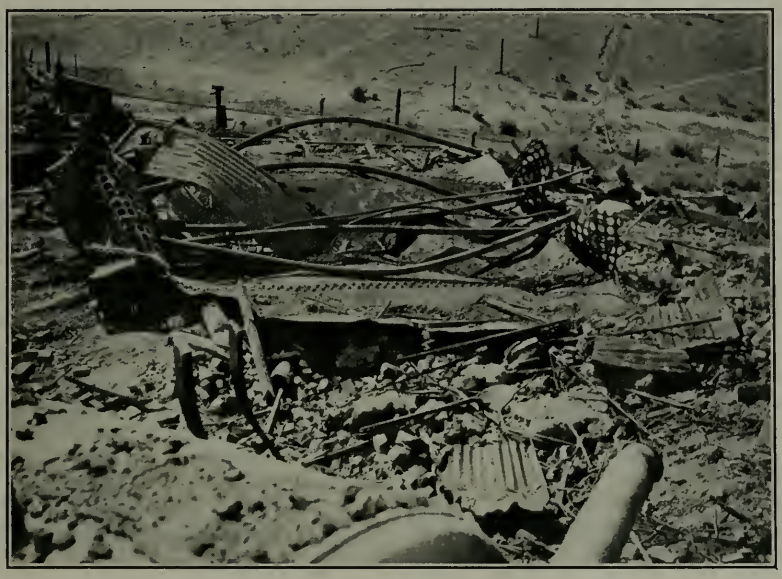


FIG. 2—VIEW OF THE EXPLODED BOILER

new breaks. The tubes and parts of the boiler house were blown over an area of one-half mile square. The steam gauges were all blown off and damaged by the explosion, so that it was impossible to determine whether or not they were in good order before the accident.

The safety valves were formerly equipped with lifting levers, but the levers were all missing.

As this explosion put an electrically driven plant out of commission, as well as the boiler plant, it clearly shows that the best policy is to be sure that all appliances on boilers are in the best working order, and especially that safety valves be equipped with lifting levers and tested not less often than once each shift. Steam gauges and water columns should also receive careful attention to assure their proper functioning.

When a safety valve is tested with the lifting lever and it refuses to open, or fails to close on occount of scale, put the boiler out of service at once, as it would be better to have the boiler out of use for a few hours while the safety valve was being repaired than to destroy life and property and have a complete shut-down for weeks. Do not take a chance.

Floors and Floor Coverings*

FLOORS and floor coverings are often a perplexing problem, especially in these days when everything connected with the building, furnishing, and upkeep of a house is high in price. Fifty years ago little attention was given to the floors themselves beyond having them level, fairly tight, and of sound lumber, for they were usually covered entirely with carpet or matting in the living rooms, and left bare and unfinished or at most painted in the kitchens and pantries.

Practices, however, have changed; today, smoothly finished floors and removable rugs are the pride of many housewives. In fact, the housekeeper finds herself almost bewildered by the variety of finishes and materials on the market. Moreover, the increased cost of materials and the high value placed on labor makes her doubly eager to spend her money wisely and to choose what will wear well and can be kept in order with the least effort. Saving needless labor is just as true economy as careful spending of money. Fortunately, there are sound principles to guide her choice, though they must be modified somewhat to meet each case.

As a general rule, it is most satisfactory to make the floor—which in this sense includes rugs or any other coverings—neutral in color, inconspicuous in design, and darker than the surrounding walls. Nor is the reason for this hard to find. The floor is the foundation and in many cases part of the background of the room and its furnishings. Despite this fact, interest in the smoothness of a finish or the sheen of a particular rug sometimes leads to a choice of colors and designs that make the floor the most conspicuous part of the room and even give it an upside-down effect.

Color is to many persons the most interesting subject of all in choosing such furnishings as floor coverings. Talk of color schemes is heard at every turn, but not all realize how many-sided is this question of color and color harmony. Too often because blue or green or rose is her favorite color the housekeeper buys that kind of rug, not stopping to think how wear will affect it, how it will look with the room as a whole, or whether the room is too dark or too light for such a color. For instance, the soft blue rug of Chinese design may show to perfection in the strong light of the top window and may be a beautiful thing in itself, but whether the room is sunny enough, whether the floor is stained the right color, and how it will harmonize with the furniture and hangings are questions the purchaser should ask herself before making her decision.

To put it briefly, then, the rug or covering should harmonize in color with the parts of the floor that show, and both these in turn with the walls, the furniture, and the curtains. Of course, this does not mean that all these must be shades of one color, for such an arrangement would soon become monotonous, but simply that they should be colors that look well together and are so used that the floor is darkest, the walls lighter, and the ceiling lightest of all.

At the time the housekeeper is deciding on color and design she must also be gathering information about wearing quality and cost. A floor is made to be walked on, and no matter how attractive the finsh or excellent the color and design of a material, it can not be considered satisfactory if it does not wear well and is not easy to clean.

Finished floors partly covered with rugs have made cleaning easier in many households. Also they are much more sanitary than carpeted floors, for the rugs can in most cases be taken out of doors frequently and cleaned.

*Extracts from a report prepared in the office of Home Economics, States Relations Service, Washington, D. C.

aired, and sunned. Much dust is thus taken out of the house instead of being scattered to settle again on furnishings and woodwork.

For the kitchen the ideal floor is easy to clean, attractive, durable, noiseless, odorless, comfortable to walk and stand on, not spoiled by water, and non-slippery when either wet or dry. Though all these points are difficult to combine in one material or finish, the housekeeper should keep them in mind in making a choice.

Varnish, shellac, wax, oil, and paint are used in finishing floors and vary not only in appearance but in the way they wear and the amount of labor needed to apply and keep them in order. It pays to study these points before choosing the finish for a floor.

In general, wax and varnish are more suitable to use in living room, dining room, and bedroom, while oil and paint, being less likely to be damaged by water, are better for kitchen, pantries, and other places where water is likely to be spilled.

No matter what finish is chosen, the best materials are none too good to use and should be applied with suitable tools. A professional wood finisher would not attempt to paint or varnish a floor without the proper brushes, and the housekeeper should not expect to get good results with poor equipment and materials.

A neutral color darker in tone than the walls makes the floor look like what it really is, the foundation and often part of the background of a room.

Proper care of a finished floor is economy. Many times finishes applied at considerable outlay have been spoiled by neglect or because wrong cleaning materials were used on them.

Rugs and other floor coverings that are plain in color or inconspicuous in design are best for general use. Kinds that do not show footprints and are not soiled easily will generally give the most satisfactory service.

Ingrain, Brussels, Wilton, and Axminster are the standard machine-woven woolen carpetings for household use, and the good grades of the last three are especially durable.

Good oriental rugs are always admired, but are now so high in price that they are beyond the reach of the average buyer. It is safe to buy them only under the advice of an expert or from a reliable dealer.

All rugs and carpets should be cleaned frequently and thoroughly. Dirt that is allowed to remain wears the fibers and becomes increasingly hard to remove.

Linoleum is widely used, especially on kitchen and pantry floors, and seems to give general satisfaction. In order to get the best service from it, it must be laid over a smooth floor in such a way that it does not buckle and should be cleaned with a damp cloth wrung out of suds made with mild soap. Alkalis, strong soap, or the use of too much water will ruin linoleum.

* * *

Approved Locks Required on Automatic Elevators

The absence of satisfactory interlocks on elevators has, in recent years, caused a number of accidents, among them 36 fatalities, according to records recently compiled by the Industrial Accident Commission.

In order to cope with the situation, the Elevator Safety Orders, which provide for the installation of adequate and approved door locks were made retroactive, so that they will cover old elevators as well as those that were installed after October 1, 1916.

No automatic elevator will be permitted to operate after July 1, 1921, unless it is equipped with acceptable door locks.

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WHAT IS A COMPETITION?

The question of competitions is always debatable. It is one of the most exasperating subjects the architectural profession has to deal with. The Institute code is plain enough, but there seems to be a wide variance of opinion regarding its interpretation and enforcement. Recently several members of San Francisco Chapter were suspended for alleged violation of the code, which declares that a competition exists when two or more architects prepare sketches at the same time for the same project.

Not having the evidence before us, it is far from the purpose of this magazine to criticise the judgment made in this case. We assume that those against whom the charges were preferred were fully acquainted with the Institute code. As members of that organization they naturally would be expected to familiarize themselves with its rules and regulations. If, in the opinion of the accused, the judgment was unfair, it would seem to be their duty to carry the affair to a higher tribunal and give the entire profession the benefit of the evidence.

The basic reason for encouraging competitions is to protect the architect from public imposition. There has long been a misguided impression among certain organizations and individuals that to secure architectural service they need only invite a few reputable architects to submit sketches for a project and pay a prize or commission for the best scheme. The unsuccessful competitors are generally compensated meagerly, if at all. The public should be made to realize that this method of securing architectural service is not to their advantage and that they must adopt a more business-like procedure before they can expect architects to give them professional service of value.

Direct employment of an architect for the service the owner requires is a simple and straightforward method of getting results. There are, however, occasions where competition in design between several architects is not only expedient but often desirable, if well defined agreements are made and equitable relations established between owner and competitors.

The Institute has recognized this, and to bring it into effect has adopted the Competition code, which, while somewhat formidable in its requirements, reduced to simple terms, is a practical guidance for the bringing about of these necessary agreements and equitable relations.

The code will get nowhere unless it has the support of Institute members, and Institute members have agreed that they will not compete unless within the meaning of the code the competition is a proper one.

The hitch seems to come in a proper definition, and a united interpretation of what really constitutes a competition.

THE PEBBLE BEACH NUMBER

That Pacific Coast architects are good judges of high-class architecture is evident from the flood of congratulatory letters which the publishers of this magazine received following publication of the "Pebble Beach and Del Monte Home Number" last month. We are indeed grateful for this universal appreciation and to those who have emphasized their approval by forwarding their subscriptions we can only add that it will be the aim of the publishers to continue to illustrate the better things our Pacific Coast architects are doing.

The following is one of the many pleasant letters received. It is from a prominent Chicago architect:

Let me congratulate you upon your November issue. Every issue is interesting, but this is particularly so. There's a freshness, a clarity in the engravings, a snap to the general get up of it that is most pleasing, that breathes of sunshine and that is altogether charming and rather uncommon in architectural publications. The cuts reflect greatest credit upon your photographer, your engraver and your printer. They are a departure in book illustration, having all the artistry of fine pencil drawings and the realism of the highest form of photography.

Keep it up.

And you're also to be congratulated upon the constituency you have that affords you such splendid material for those beautiful illustrations. Nowhere else in the country have the architects so well solved their local problems in design. Eastward we seem to flounder about, planting down dainty enough and summery bungalows in sections uttely unfit for summery things and heavy, cold-resisting structures in almost tropically southern climes. Your folks to the contrary consistently evolve or adapt a style suited to your climate and plans that make wonderfully livable homes. They've grasped their opportunities and to my mind are really and truly architects.

Notes and Comments

If you had your life to live over again, what would you choose as your life work?

Architect Should be a Dreamer, Says Maybeck

Would it be the profession or vocation you have followed, or would you join that host whose cry is "Any other profession or vocation is better than mine"?

These questions were asked Mr. Bernard R. Maybeck, the San Francisco architect, who designed the Fine Arts building at the Panama Pacific Exposition, by a representative of the San Francisco Examiner. Mr. Maybeck, generally quite reticent about himself, is quoted as having made answer as follows:

To answer your question I must try to picture myself to myself at 21, making drawings of furniture in a New York furniture factory. Men come to the factory, men of dignity and position, men who wear nice gloves—architects. I stare at them.

Another man comes to the factory, and I overhear him say, "If I were a young man starting out I would go clear to the other side of the continent."

Thinking of those two occurrences I say to myself, "I should like to be an architect, and I should like to go to the other side of the continent."

I threw up my job, and went to Paris to study architecture. I would do the same thing again. I later came to California. I would repeat that, too.

Now as to the things that I would like to see changed in the lives of young architects. One would be a change in the type of examinations given. At present, and in my young days, the examination given the student architect in California, New York and Paris, is about the same. Examinations, I think, should allow more show of individuality on the part of the student. It is uncharitable to expect each student to answer the same questions, and receive the same impressions.

Another thing, the architect should be able to paint and model, and above all to dream. I think he should not have to give his attention to the details of bolts and iron shafts, and so forth. He should have a general knowledge of that phase of construction, yes, but the details should be left to engineers.

If I were a young architect again I should hope for a sharper differentiation between the work of the architect and the work of the engineer.

Cost of Pedro Dam Project

Expenditures for all purposes on the Don Pedro dam project of the Turlock and Modesto irrigation districts to date total $1,109,120. A little less than half of this amount has been expended on construction of the dam and the railroad to the dam site. Cost of the railroad and equipment to date is given as $258,-074. According to the engineers' report the work is several weeks ahead of schedule.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Sixteen Story Office Building

The Matson Navigation Company will soon proceed with the erection of a sixteen-story Class "A" office building at Main and Market streets, San Francisco, according to Mr. A. B. Swinerton, manager of the Lindgren Company, which has been awarded the general contract on a percentage basis. The building will cost $1,500,000.

The plans are being prepared by Architects Bliss & Faville, and the architectural treatment calls for the use of terra cotta exclusively on the Market and Main street facades. A contract already has been closed with the American Bridge Company for furnishing 2,000 tons of structural steel, all of which has arrived and is ready for erection. A contract has also been entered into for five high-speed elevators to be furnished by the Otis Elevator Company.

Los Angeles Junior Highs

The Los Angeles Board of Education has appointed architects for additional junior high school buildings as follows: Wm. Curlett & Son, Merchants' National Bank building, for new classroom building at Sentous junior high school to cost $88,000; and John P. Krempel and Walter E. Erkes, Bradbury building, for new classroom building at Berendo junior high school to cost $81,000.

Pomona High School

Plans have been completed by Architects Robert H. Orr, Los Angeles, and W. H. Weeks, San Francisco, for the new high school buildings at Pomona. The main building will be two stories and basement, 275x160 ft., with a one-story manual arts building, 100x120 ft. Construction will be of selected brown brick and terra cotta, clay tile and composition roofs. The sum of $425,000 is available for the buildings.

Reinforced Concrete Garage

Plans have been completed by Architects O'Brien Bros., 240 Montgomery street, San Francisco, for a two-story and basement reinforced concrete garage to be erected on Jones street, near O'Farrell, San Francisco, for Mr. R. W. Kern. The estimated cost is $60,000.

Students' Hotel for Berkeley

Preliminary plans have been prepared by Architect G. A. Applegarth for an eleven-story hotel to be erected on the block bounded by Hearst avenue, Euclid avenue and the Ridge road, Berkeley, for the accommodation of the students attending the University of California and who are at present unable to obtain living quarters, the University of California having no dormitories. It is proposed to charge students $50 per month for rooms and bath with board. The hotel is to be known as the New Shattuck and will cost $1,500,000. The Lindgren Company will build the structure.

Four Story Office Building

Plans are being prepared by Architect G. A. Lansburgh of San Francisco for a four-story and basement reinforced concrete store and office building for Mr. George H. Roos of Roos Bros. The building will occupy the one remaining lot on Montgomery street between Post and Bush streets, San Francisco. MacDonald & Kahn are the builders. This firm has also taken a contract to build a one-story store building on Mission street, between Seventh and Eighth streets, for Mr. Chas. Wilson, from plans by Architects Weeks & Day.

Will Design Hospitals

Architect Albert Cauldwell, 251 Kearny street, San Francisco, has been appointed provincial architect for the Sisters of Mercy, who have hospitals, schools and old people's homes throughout the state of California. Mr. Cauldwell will prepare plans for a number of buildings for the Sisters of Mercy in 1922.

Mr. Caulwell has also been commissioned to prepare plans for a three-story Class "C" college building at San Rafael, Marin county, for the Dominican College. The cost of the improvements is estimated at $80,000. Other work in Mr. Cauldwell's office includes plans for the restoration of Mission Dolores.

Architect Moves

Architect H. C. Deckbar has moved his office to suite 1006-7 Wright & Callender building, Los Angeles. Architect Frank G. Krucker will retain the offices at 520 Ferguson building.

Architect Heiman Busy

Architect S. Heiman, 57 Post street, San Francisco, reports considerable new work in his office, including a two-story Class "C" store and studio building on Post street, west of Mason, for Dunn-Williams & Co. and a one-story reinforced concrete store building and garage for the same owners at O'Farrell and Shannon streets. Barrett & Hilp have the contract for the latter building at $50,000. Mr. Heiman has completed plans for a frame flat building at Divisadero and Waller streets for Mr. George Simons to cost $17,000, and he is working on plans for altering two flats on McAllister street, east of Divisadero, San Francisco, into four, three-room apartments, for Mr. Y. Levin. Plans are also being made for a $6,000 bungalow on Nineteenth avenue for Mr. A. Sokolov.

Meyer & Johnson Busy

Working drawings are being completed by Architects Meyer & Johnson of San Francisco for a five-story Class "A" Elks' building at Bakersfield. The lodge will occupy the entire structure, which will contain seventy sleeping rooms with baths, in addition to lodge rooms, auditorium, gymnasium and swimming tank. The estimated cost is $250,000. Steel bids are now being taken.

The same architects have been commissioned to prepare plans for a brick and hollow tile firehouse in St. Francis Wood to cost $45,000 and for a reinforced concrete drill tower for the San Francisco fire department, to be erected at the foot of Eleventh street, at a cost of from $40,000 to $50,000.

Capitol Extension Buildings

The California State Building Commission has authorized the State Department of Public Works to receive bids for the construction of the new capitol extension buildings in Sacramento, which have been designed by Architects Weeks & Day of San Francisco and for which bonds amounting to three million dollars have been voted and sold. Segregated bids are being taken now on excavating, piling, concrete work, and structural steel.

Burlingame Apartments

Architect Chas. E. J. Rogers of San Francisco has completed plans for a two-story concrete store and apartment building to be erected at Burlingame for Mr. Harry Miller. Mr. Rogers has also made plans for a $10,000 residence in St. Francis Wood, for Mr. H. N. Thomas.

Architects for High School Group

George C. Sellon & Co. of Sacramento have been appointed architects for the proposed new high school group at Placerville, El Dorado county. A bond election for $250,000 will be held.

University Offered Free Site

Announcement is made by Mr. E. G. Lewis of Atascadero, who holds an option on the Palos Verdes ranch near San Pedro, that an offer of 1,000 acres and $1,000,000 cash for laying out the grounds and erecting buildings for a branch university will be made to the regents of the University of California. Choice of a location on the ranch will be given to the university if the offer is accepted. Mr. Lewis is expected to exercise his option on the ranch before January 1, 1922.

Annual Seattle Exhibition

The Seattle Fine Arts has extended the use of its rooms to the Chapter of Architects in that city for its annual architectural exhibition, to take place next April. This announcement is made at this time because it has been found in the past that many architects have a large amount of material but always claim that they have no time for proper presentation of it.

Branch Bank Buildings

Plans have been prepared by Architect Edward T. Foulkes, Crocker building, San Francisco, for a branch bank building at San Pablo avenue and Fifty-sixth street, Oakland, for the Bank of Italy, and also for a branch building at Market and Castro streets, San Francisco. They will cost $40,000 each.

Long Beach Office Building

Plans are being prepared by Architects John C. Austin of Los Angeles and W. Horace Austin of Long Beach for a six-story reinforced concrete office and theatre building, to be erected on Ocean Boulevard at a cost of $300,000, for the Long Beach Bathhouse and Amusement Company.

Automobile Club Building

The Automobile Club of Southern California will erect a Class "A" office building at Twenty-sixth and Figueroa streets, Los Angeles, from plans by Architects Hunt & Burns, Laughlin building, Los Angeles.

Hayward Theatre

Plans have been completed by Architect Henry H. Meyers of San Francisco for a two-story store and office building and moving picture theatre at Hayward, for Mr. Chas. W. Heyer. The cost is estimated at $100,000.

Livermore High School

Working drawings are being prepared by Architect Henry H. Meyers, Kohl building, San Francisco, for a one-story hollow tile school building at Livermore. Bonds amounting to $115,000 have been voted.

Portland Building Interests Unite

An association of existing building craft organizations, including architects, contractors, sub-contractors and specialty houses, is being organized as the result of a meeting held recently in the Architectural Club rooms at Portland, Oregon.

Mr. Ellis F. Lawrence, Portland architect and dean of architecture at the University of Oregon, presided at the meeting and was elected permanent chairman. Mr. Lawrence outlined the reasons for calling the meeting and pointed to the need of aiding the educational work.

The building industry, which is the second largest business in the country, lacks the proper representation which it is entitled to, due to the failure of those engaging in it to work together. The various building crafts are well organized, independently, but they fail to function as a unit. It is believed that one big advantage in such an organization will be the prestige gained in appearing before public bodies when occasion arises.

Personal

Architect George E. McCrea has moved from Capitola to the Exchange building, 369 Pine street, San Francisco.

Architect Jas. T. Narbitt has moved from the Easton building to the Syndicate building, Oakland.

Architects Earl Bertz, Lester W. Hurd and Charles F. Masten have moved their offices from the Foxcroft building to 168 Sutter street, San Francisco. Their phone number is Douglas 322.

Architect Edward M. Garden announces that he has severed his connection with J. Myron Haenke and has opened offices under his own name at 604 Balboa building, San Francisco.

Architect Headman Busy

Architect August G. Headman has been engaged by Mr. C. H. Petersen, formerly of the firm of McLaren and Petersen, as consulting architect in connection with the seven story reinforced concrete apartment house which Mr. Peterson will erect on his property on the north side of O'Farrell street, west of Jones, San Francisco. The building will contain one hundred rooms arranged in two and three room apartments. The cost is estimated at $175,000.

Architect Headman has completed plans for a one story and basement reinforced concrete store building to be erected on the south side of Geary street, west of Jones street, San Francisco, and his office is now engaged in the development of numerous other projects of a more or less pretentious character.

Architects Inspect New Vessel

Because of its excellence as a specimen of marine architecture, the steamship Southern Cross, one of the best equipped of the newly constructed Shipping Board vessels now being operated by the Munson Steamship Line, was inspected by the New York Chapter of the American Institute of Architects on Tuesday, November 22nd.

This vessel has just been put into commission on the Munson Line route between New York and South America. Together with its sister ship, the "American Legion," the vessel has been establishing records between New York and Rio de Janeiro.

The architects were very much interested in looking over the interior equipment of the boat, which is said to be a model among steamers used in South American service. The Chapter as a whole took luncheon in the dining saloon of the "Southern Cross."

Stockton Architectural Exhibit

The Stockton Association of Architects have started a campaign to lower the cost of building and have presented a petition to the Building Trades Council and the Building Trades Craftsmen of the City of Stockton, asking a 12½ per cent reduction in all building trades wage scales.

The association is planning to hold an architectural and building material exhibit in Stockton January 21st to 28th. The following committees have been appointed to take charge:

Exhibit Committee—E. B. Brown, Wm. J. Wright, I. C. Satterlee, Victor Galbraith and L. S. Stone.

Architectural Display Committee—E. B. Brown, J. U. Clowdsley, and L. S. Stone.

Finance Committee—J. U. Clowdsley, Peter L. Sala, and Franklyn E. Warner.

Publicity Committee—J. M. Burke, R. P. Morrell, and Frank V. Mayo.

Entertainment Committee — Peter L. Sala, Jos. Lossekan, and Chas. Young.

Eight Women Architects in California

California has issued certificates to eight women to practice architecture, the last one having been granted only recently. At least one woman architect, Miss Julia Morgan of San Francisco, has won a high reputation in the profession and many splendid buildings are monuments to her skill. Women have always shown their ability to rise to opportunities and as the professions are opened to them we may expect them more and more to be taking places in the first ranks. — Southwest Contractor and Builder.

Some Impressive Figures About the New Standard Oil Building

The foundations are being laid at Sansome and Bush streets for San Francisco's largest office building. Some idea of the size of this structure may be had from the statement of the architect, Mr. George W. Kelham, and the engineer, Mr. H. J. Brunnier, that the steel frame alone will require 6000 tons of structural steel, and an additional 1000 tons of reinforcing steel; 18,000 cubic yards of concrete will be used for the walls and floors of the twenty-two story structure and 900,000 square feet of forms will be required to hold the concrete.

The foundations will be 35 feet below the sidewalk. There will be 3,300,000 common brick used in the construction of the building in addition to 300,000 face brick and 140,000 square feet of architectural terra cotta. Something more than 17,000 square feet of granite will be required, together with 200,000 square feet of partition work and $225,000 worth of marble and tile.

There will not be a single stick of wood in the building, all interior trim being of hollow metal. There will be a battery of nine high-speed elevators. The ground area to be covered by the building measures 206-3x137-6 and the estimated cost of the structure complete is $4,500,000. The Lindgren Company is in charge of construction.

San Francisco Architectural Club Educational Work

The San Francisco architectural club, 77 O'Farrell street, announces an educational course for its members for the fall and winter of 1921-22. Similar classes have been conducted by the club for several years past and their value is attested by the high standard maintained by the draughtsmen of San Francisco and vicinity. The courses are run at cost and all organization work is done gratis by members of the club. Large classes are anticipated, particularly those in "Building Construction" and "Reinforced Concrete." Mr. R. S. Chew, C. E., has been engaged to conduct the structural classes. He has directed similar courses for the past six years with splendid results. There will also be courses in "History of Architecture," "Heating and Ventilating," and "Architectural Modeling." Mr. F. Amandes has been appointed massier of the atelier which will hold its initial problem September 24.

Landscape Plans

Professor J. W. Gregg, Landscape Architect of the University of California, has been commissioned to prepare plans for the general arrangement of buildings and all landscape features for the development of the new State Home for Women at Sonoma.

Because of the naturally beautiful location of the new institution, it is expected that when completed in accordance with the general plans now being prepared, it will be the most beautiful and serviceable institution of its kind in the country.

Cost of Accident Insurance in Construction

Forty-two of the forty-eight states in the Union have passed employers' liability or workmen's compensation acts which hold the employer liable for accidents incurred by workmen in his employ. The compensation acts provide for the payments to be made to the workman, the safeguards with which the employer is to surround his operations and, through the state insurance commissioner, the rates which are to be charged by the insurance and indemnity companies for carrying the employers' liability or workmen's compensation insurance. The amount of such insurance which the contractor must carry ranges from about 3 to 10 per cent of the payroll. The rates vary quite decidedly for different states. In an article, "The Elimination of Construction Wastes in Chemical and Metallurgical Engineering," Mr. George W. Burpee, vice-president, Dwight P. Robinson & Co., Inc., gives the following comparison of the rates for New Jersey, a low-rate state, and those for New York, a high-rate state, for some of the commoner building trades:

	Rates per $100 of Payroll	
	New Jersey	New York
Masonry	$3.36	$8.30
Concrete work on buildings.	2.94	7.49
Carpentry work outside....	3.51	11.564
Carpentry work inside.....	0.70	2.102
Structural steel workers....	9.07	27.569
Grading	0.98	2.397
Cellar excavation less than 12 ft. deep, no subaqueous work or blasting.....	1.15	2.76
Blasting	13.83	22.80
Millwright work	1.72	3.833
Miscellaneous labor	1.72	3.833
Supervision, including superintendents and engineers..	1.19	1.560

Montana Architects Meet

Great Falls was chosen as the 1922 meeting place of the Montana Association of Architects at the closing session of its convention held at Billings on September 2nd and 3rd. The convention will be held early in the fall and the members attending will tour Glacier National Park. A committee of the Montana Contractor-Dealers' Association attended and took part in the opening session.

Fresno Hotel

The Sun Maid Hotel Corporation has been incorporated for the purpose of constructing a ten-story hotel in Fresno at an estimated cost of one million dollars. Plans are being prepared by R. F. Felchin & Co., architects and managers of construction, Fresno. The hotel will have three hundred rooms.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Promoting Engineering Progress

By C. E. DRAYER
Secretary, American Association of Engineers

FOR fifty years the engineering profession has devoted its energies to the single object of harnessing the forces of nature in the service of civilization. Engineers have been so engrossed with applying the laws of physics and mathematics that they have found little time to devote to simple problems of living. They have built railroads, streets, dynamos, flying machines, and battleships, but they have given little thought to the men who operate them and in whose interest matter has been assembled and power utilized in new forms. The new movement in the profession, embodied in the American Association of Engineers, supplements the strictly technical efforts of the past.

But six years old, the American Association of Engineers has 24,000 members—the largest single organization of professional engineers. As this association develops in strength and influence, it hopes eventually to enroll most of the 200,000 members of the profession in the United States.

The highest aim of any profession is devotion to public service, and one of the fundamental endeavors of the American Association of Engineers is to emphasize the policy of developing the human qualities of integrity, courage, reliance and efficiency of every member so that "engineer" will carry the thought not only of technical skill, but also of a valued and respected leader in the community. One of the purposes, therefore, is to inform the public of the extent to which engineering services may be utilized. Members are expected to keep in contact with social, political and educational organizations and to participate actively in civic affairs. Organizations such as the common council, county commissioners, or chambers of commerce in every community have problems in which engineering talent could find an opportunity for public service. Not only can the engineer help in maturing plans for civic betterment, but he can give practical suggestions for beginning such movements. Mention of a few, such as water supply, sewage disposal, flood control, reclamation, transportation of foods and raw materials to market, economic development of natural resources, will suggest a host of others.

The association has had a large part in the educational program of the country leading to reorganization of the government on something approaching a business basis. We do not believe that the government can be made a business or that it should be engaged in business, but we are confident that plans before the joint congressional committee will result in greater economy and efficiency.

Special legislation establishing a higher plane of engineering service — begun largely by the association—has resulted in laws in some dozen states requiring engineers to be examined and registered. Among these are New York, Pennsylvania, Virginia, Michigan, Colorado, Arizona, and Oregon. It is believed that all the states will have adequate registration laws within the next five years. We expect to give an increasing amount of attention to securing better laws, new laws favorable to public health and welfare, and to the development of the profession.

Ethical standards of professional conduct are maintained by both national and local practice committees. It is expected that each member will conduct himself as an engineer and as a citizen in a way that will reflect credit on the profession. Any breach of professional conduct is given careful consideration by the association, and if necessary, disciplinary procedure applied. Yet the purpose of the practice committee is not to discipline, but rather to guide and educate the unsophisticated.

While the main purposes of a professional organization must be altruistic, the association is not unmindful of the material needs of its members. We have a national employment service which last year placed over 3,000 members at an annual saving of over $300,000. The employment service is growing so that within a year it will be prepared to furnish an employer, whether private or public, with the best professional help, from tracer at $1,500 a year, to manager of an industrial plant at $25,000 a year or more.

A suggested schedule of minimum salaries has been prepared, so that both employer and employee may know the pay commensurate with the duties and responsibilities. Such a standard has, on

the whole, been mutually satisfactory, and has resulted in better service.

Special attention is given to helping the young engineer when he is becoming established—the difficult period of his life. The young graduate has been so engrossed in becoming well grounded in technical lines that he is likely to be lacking in the grasp of life which comes from an understanding of the laws of business economics. The banker, the business man, and the public in general have simple trust in the ability of the engineer to solve most any physical or technical problem, but they are likely to avoid his counsel in administrative problems. Not only are we finding positions for the young man to which his training and talents adapt him, but the association endeavors to continue his training with special attention to social and business needs.

Summing up, the efforts of the association have been toward the improvement of the social and economic welfare of engineers, and to make engineers of the greatest value to the people as a whole. The growth of the association from 3,000 to 24,000 members in three years is conclusive evidence that there is a need for such constructive work and that engineers appreciate its importance. But much more remains to be accomplished.

Motor Trucks and Our State Highways

IN the production of trucks in the United States in 1920, only two per cent were of five-ton capacity and only one per cent over five-ton. As the ratio of use must be in close proportion to the ratio of production, it follows that only about three per cent of vehicles, using California state highways, are of the so-called heavy duty type. This year there were approximately 40,000 trucks of all kinds registered in the state, which indicates only about 1,200 to 1,500 trucks of five-ton or more capacity.

Highway construction, like other governmental activity, is based on public necessity,and this necessity should be met reasonably when highways are built, adequate to sustain 90 per cent of the traffic. In California this percentage will include all motor, and other vehicles, up to and including two-ton capacity.

Assuming that for $30,000 per mile an improved highway can be built adequate to sustain 90 per cent of the vehicular traffic of the state, but that it will require $50,000 per mile to construct a highway which will sustain the weight required by ten per cent of heavier duty trucks, should the general taxpayer be required to invest an additional 66 per cent in road construction for the exclusive benefit of this particular class of heavy vehicles?

There is a distinct trend in recent motor vehicle legislation in other states to tax vehicles which use highways on a basis of use or wear, by fixing a tax both on horsepower and weight, or a gasoline tax which automatically distributes itself according to the amount of fuel consumed.

There is also a pronounced disposition to limit loads to reasonable proportions for the more perfect protection of highways.

California at present does neither of these things. Highways are being constructed from bond funds provided by general taxation. Motor vehicle license fees are inadequate to provide funds necessary for proper maintenance, and the fees bear no relation to the wear and tear to which the vehicle licensed subjects the highway. The legal weight limit here is equaled by only three other states in the Union.

Engineers Nominate Officers

San Francisco Chapter, American Association of Engineers, through its nominating committee consisting of Messrs. C. D. Stone, E. M. Holbrook, C. J. R. Wilson, F. G. Darlington and J. J. Rosedale, has made the following nomination of officers for 1922:

Mr. W. H. Phelps for president, member No. 3345, asst. div. engr. S. P. Co., San Francisco, Calif.

Mr. George Mattis for first vice-president, member No. 21921, ex-officio city engineer and supt. of streets, city of Oakland.

Mr. Donald M. Baker for second vice-president. Member No. 14430, field engineer, division water rights commission, Berkeley, Calif.

Col. F. J. Amweg for treasurer. member No. 4140, advisory engineer and manager of building operations, San Francisco.

Capt. A. J. Capron for secretary, member No. 22794, retired construction engineer, San Francisco, Calif.

Directors-at-Large

Mr. G. Chester Brown for two years. Member No. 17000, chief mining engineer for State Mining Bureau and Industrial Accident Commission, San Francisco, Calif.

Mr. Thomas H. Means for two years. Member No. 17663, consulting engineer, San Francisco, Calif.

Mr. E. E. Carpenter for one year. Member No. 22794, consulting engineer, San Francisco, Calif.

Mr. R. E. Dodge for one year. Member No. 7058, assistant division engineer, California Highway Commission, San Francisco, Calif.

Dispute Over Authorship of Hydraulic Fill Dam

Dispute over authorship of the development of the hydraulic fill dam, which recently arose before the American Society of Civil Engineers, San Francisco, has been resolved in favor of Mr. J. M. Howells, an engineer of San Francisco, according to a statement issued by Mr. W. G. Wilhelm, chief engineer of the East Bay Water Company.

Mr. Allen Hazen of Boston, in a paper read before the society, gave credit to Messrs. Schuyler and Howells, while Mr. George L. Dillman called this a "misstatement of fact," saying that the Chabot or San Leandro dam "was built before they were ever heard of, and was largely hydraulicked."

Mr. Wilhelm says that in a paper read to the society, Mr. Howells took no part in the personal question involved but confined himself to discussion of technical details. In his statement Mr. Wilhelm says:

"As the hydraulic process of dam building has revolutionized earth dam construction and become standard throughout the world it is no more than justice that the unpublished defense of Mr. Howells' connection with the matter should be known.

"P. E. Harroun, consulting engineer of San Francisco, who quoting authorities and speaking from his own personal knowledge, shows that the San Leandro dam was not built by the hydraulic method. Furthermore, the writer believes that Mr. Howells is the pioneer in hydraulic fill dam construction, having built three dams of this type before Mr. Schuyler entered the field. These dams were the Tyler Texas dam in 1894, La Mesa dam in 1895, and the Crane Valley dam in 1899-1900.

"Mr. Harroun says: 'The first true hydraulic fill dam known was, I believe, the dam at Tyler, Texas. This dam was designed and built by J. M. Howells, M. Am. Soc. C. E., now consulting engineer in San Francisco. Prior to that time Mr. Howells, in 1892-3 had designed and was building an earth dam 1250 feet long and 95 feet high at Santa Fe, New Mexico. The writer was resident engineer in charge of construction on the work at Santa Fe and during this time Mr. Howells repeatedly discussed with the writer the problems pertaining to the hydraulic fill type and some experimental work in sluicing and also in hydraulic segregation of material was carried on.

"'I think there is no question whatever, but that the dam at Tyler, Texas, built by Mr. Howells in 1894 is the first true hydraulic fill dam ever built.'"

California Members on National Committees

As a result of the good work in handling matters pertaining to the affairs of the American Association of Engineers in San Francisco, Mr. W. H. Phelps and Mr. E. E. Carpenter, of San Francisco Chapter, have been appointed to serve on National Committees.

Mr. Phelps recently represented the Southern Pacific Railroad section before the United States Labor Board and since has been appointed on the National Railroad Council and Committee on Chapter Activities.

Mr. E. E. Carpenter, chairman of the Committee on Ethics and Compensation of San Francisco Chapter, has been appointed to serve on the National Practice Committee. Mr. Carpenter prepared the schedule of salaries adopted by the State Civil Service Commission.

New Phase of the County Engineers' Act

The decision of the Supreme Court declaring the county engineer act unconstitutional had no other effect on Surveyor R. R. Arnold, appointed Contra Costa county engineer under the act, than cutting his salary from $6000 to $3250, according to an opinion recently given at Martinez by Judge R. H. Lattimer, after issuance of an order directing County Auditor A. N. Sullenger to honor Arnold's $270 salary warrant. The order was made as a decision on a petition for a writ of mandate instituted by Mr. Arnold after the auditor had refused to honor his warrant because of the situation created by the Supreme Court declaring the engineer act invalid.

In discussion of his order, Judge Lattimer declared that as far as the law was concerned, in view of the Supreme Court decision, Arnold was never engineer. The fact that Contra Costa had advanced from a county of the sixteenth to a county of the thirteenth class, and that the act for the thirteenth class does not provide for a surveyor, does not alter the case, Judge Lattimer asserted, declaring that a general state law creating county officers is effective.

Mr. Arnold was appointed engineer six months ago. The difference in salary voted him as engineer and as surveyor will have to be returned to the county.

Engineers Named

Mr. E. G. Lewis, the founder of the Atascadero colony in San Luis Obispo county, who has an option to buy the Palos Verdes ranch of 16,000 acres west of Los Angeles harbor, has announced the appointment of the following well known engineers as members of the engineering commission which will plan the development of the property: Prof. Charles Gilman Hyde, Francis L. Sellew and Floyd G. Dessery, engineers for sewer system; Louis C. Hill, Fred C. Hermann and George G. Anderson, engineers for water system; Charles B. Wing, Franklin D. Howell and Frank H. Joyner, engineers for road and boulevard system. Prof. H. T. Cory will be chairman, and Col. John C. Lowe, secretary of the engineering commission. Mr. Lewis' plans for development of the ranch include a monorail rapid transit line from Los Angeles to the ranch, a $1,000,000 hotel and offer of a site for a branch of the University of California.

Engineers' Building

If the proposed plans materialize a twenty-five story building to be known as the "San Francisco Engineers' Building" will be erected in San Francisco to house all the engineering interests.

A board of regents has been appointed to consider the undertaking.

"The Captains and the Kings Depart"

THE last workman has packed his tools and gone. The builder's job is finished. Through the empty house the architect passes, taking it all in for the last time, room by room.

It is *his* job—his life's work. No matter who *buys* the house, no matter who *uses* the house, the architect's title to the soul of the structure will stand unchallenged as long as the walls themselves stand.

It is *his* job. *His* vision guided the stroke of every hammer, of every chisel, of every trowel, of every brush. Thought endures forever, while labor has an end.

* * *

Yet there was a time when the architect contributed more than design, form, harmony—he was himself a master builder, working with his men—himself a manufacturer also, forging and shaping iron, brass, copper, and bronze.

To others long since have fallen the duties of forge and anvil, smelter and crucible, hammer and trowel. The *substance* of the house is no longer one with its *thought*.

No longer *one*, substance and thought are still inseparable. Inert and meaningless the stone, brass and wood until summoned by the power of the architect's thought. Disembodied, equally meaningless is the carefully sketched thought until realized in substance of steel, wood, and stone.

* * *

Architect, Builder, Manufacturer—no matter how far apart they seem in purpose, in technic, or in ambition, the good of one is the good of all, and the good of all is the good of each.

That there may arise a more conscious appreciation of this—a spirit of closer cooperation—a return of that ancient "Craft fellowship" when pencil, hammer and forge worked under one roof—is a message of sincere good will which we are certain will find a responsive echo in many hearts.

THE STANLEY WORKS
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Makers of Wrought Hardware and Carpenter's Tools.

STANLEY S.W.

The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

May the Average Home Builder Safely Build Now?

By FRANKLIN T. MILLER*

NO question today has a more intimate importance for the average American family than accrues to the question of whether or not it now is safe and prudent for the man of limited means to undertake the building of a house.

Obviously, one can not reduce the answer to this question to a rule or formula which will apply to each individual's case with arithmetical precision and infallibility. The individual decision always must weigh circumstances and conditions peculiar to the individual family, the fortunes and welfare of which are involved. No one can now, or at any future time, relieve the head of the family from the responsibility of deciding wherein his circumstances amend or nullify conclusions warranted by general conditions and based on the common denominator of general facts.

The service which can be rendered is to state, with reasonable exactness, the general conditions.

There are many factors, and some of them are very intricate, which must be kept in mind if one is to approach a sound conclusion on whether or not it now is safe for a man of moderate means to undertake home building. Without confusing rather than clarifying the discussion, four of these factors ought to be emphasized because a man should know before he decides not to build just what the decision will cost him.

These four important factors are: (1) Present and future rents, (2) the present and future purchasing power of the dollar, (3) the future trend of prices, and (4) the effect of European conditions.

Rents are high. They will continue above the pre-war level for several years because the entire country is short on housing facilities and it will take several years to make up the deficit.

The purchasing power of money is below the pre-war standard and it will improve only as we re-establish the pre-war ratio between money and credits on one hand and goods on the other.

The general trend of prices for many years will be downward with periodical reactions and, in large measures, the rapidity of the decline will depend, from now on, on how completely we approximate capacity and continuous production. Now have in mind the fact that when we use the full capacity of our productive facilities continuously we turn out vastly more than we can consume in the United States and it becomes rather clear that—

European conditions must improve so that the European markets can absorb our surplus before the price level in the United States will reflect the economies and lower producing costs possible only where we make the maximum use of our producing facilities.

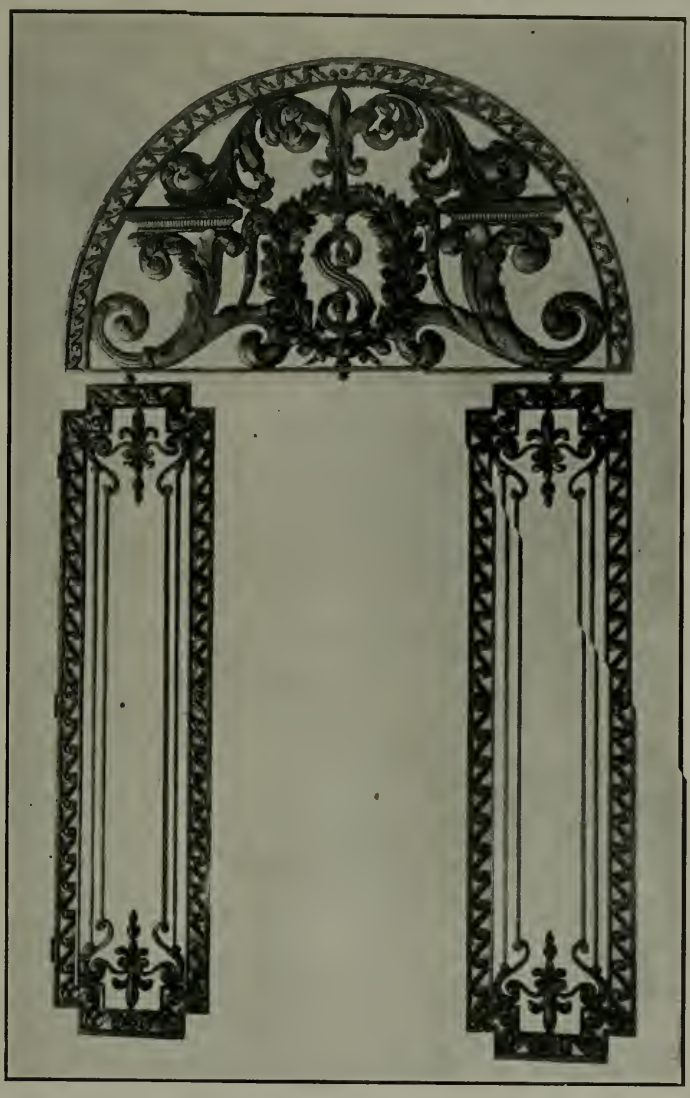
How long will it take Europe to restore her purchasing power to where it was prior to 1914? My answer is: Longer than I expect to live and yet every reputable authority on economics is agreed that this purchasing power and a resumption of normal business relations with Europe are conditions precedent to the lowest possible price level in this country.

In my remarks before the Housing Conference of the Chamber of Commerce of the United States, held in Washington on January 29, 1921, I stated that in January, 1919, I had to do with a "Build Now" compaign which was prosecuted throughout the country for several months, and that I believe those who built during the spring of 1919 have had no cause for regret, because the costs then were comparatively low.

I stated to the Housing Conference, however, that I was tempted to advise the small home-builder not to build, but to wait until the average price of building materials fell to the average of general commodities; to wait until transportation was ample, and to wait until he could get fully 60 per cent of his building as a loan at 6 per cent and without paying a bonus. I cited the influence of the artificial restrictions which had been placed on construction during the prior three or four years and drew attention to the rapidity of the fall in general prices after they reached their maximum of 272 in June, 1920, averaging a monthly recession of 13 points.

Now I want to call attention to the fact that the rapidity in the fall of prices gradually slowed down until they reached 148 in June, 1921, and for the first time

*Extracts of an interview published in the Construction Economics Edition of the American Contractor.



Steel Sash Wire Work Ornamental Iron

Michel & Pfeffer
Iron Works

10 and Harrison Streets, San Francisco, California

since the peak was reached, showed no recession during the following month, the index for both June and July being 148. For April, 1921, the index for general commodities, wholesale prices, was 154; in May it dropped to 151, in June it dropped to 148 and remained at that figure in July—only six points reduction in four months!

For a long time it has been expected that there would be a halt to the downward reaction in prices, and this now has occurred. Prices gained four points in August so that the index for that month was 152, an upward rise at a more rapid rate than occurred during the war. Building materials, including steel, have fallen to 156, notwithstanding the extra burden of freight rates which they carry and will continue to carry for some time.

It seems, therefore, that the time is approaching, if it is not already at hand, when people would be warranted in going ahead with building operations, because building material prices have reached approximately the same level as general commodities and because a reaction upward is likely to develop. That this reaction is likely is suggested by the advances in Southern pine and Douglas fir lumber quotations within the last month and the tendency of the steel market to strengthen a little.

What Is a Fair Rental?*

WHAT is a fair rental for dwelling house property? A rule of thumb has often been laid down that a dwelling house should return a gross rental of 10 per cent. of its value. A vast amount of dwelling house property has been rented on this basis, or less. Yet it is certain that, by and large, a gross rental of 10 per cent. will not return even a savings-bank rate of interest to the owner. In some cases it will return practically nothing.

Some rather careful calculations of the cost of operating dwelling house property indicate that, instead of a gross rental of 10 per cent, a gross rental of at least 13 per cent., and frequently 15 per cent. or more, is necessary to return a yield at all remunerative.

One calculation of this sort, prepared by the United States Housing Corporation, places the normal cost of operating and maintaining ordinary dwelling house property at nearly 8 per cent; a figure which, in view of the general advance in taxes, supplies, and labor during the past few years, should be increased at the present time. The operating costs for apartment house property are considerably higher than 8 per cent.

The United States Housing Corporation's figures, which represent the median experience as reported for the period 1913-1918, and which should be taken as a broad basis rather than as a specific formula, are shown in the following table.

Factors	Per Cent. on Investment
Maintenance	1.4
Service	.5
Insurance	.2
Taxes and Assessments	1.4
Vacancies and Bad Accounts	.7
Depreciation and Obsolescence†	3.0
Administration	.5
Total Expense	7.7

On this basis a gross rental of nearly 14 per cent. would be needed to return even 6 per cent. on the investment. But it should be clear that at the present time a 6 per. cent. return does not adequately compensate the owner for the burden and risk of maintaining such property.

Mr. William C. Benkert, former president of the Philadelphia Real Estate Board, has placed the operating cost of dwelling house property at 7.1 per cent., as follows:

	Per Cent.
Taxes and Water Rates	2.5
Vacancies	1.0
Repairs	1.0
Insurance	.1
Management	.5
Depreciation and Obsolescence	2.0
Total	7.1

The allowances for depreciation and obsolescence used in the preceding calculations may be accepted as conservative.

Practically no reliable estimate has placed the operating cost of dwelling house property at less than 7 per cent.

Obviously, therefore, the old rule of thumb of a 10 per cent. gross rental should be discarded. The foregoing calculations of operating costs suggest that a gross rental of 13 per cent. is a minimum economic return on such property.

A gross rental of 13 per cent, means that a house and lot worth $8,000 should rent for $1,040 a year or, roughly, $87 per month; a gross rental of 15 per cent. would mean, for such a house, a rental of $100 per month.

The rental should be related to the fair current value of the property, not to its cost, which may be more or less than its value. Depreciation and obsolescence charges are properly to be computed on the original cost. But the rental must take account of the value. Any attempt arbitrarily to regulate the rental on the basis of a lower original cost necessarily means that the competition of such rentals will discourage the building of new houses on which a similar rental would not yield an economic return. The capitalist who must face such competition is forced to look to other fields of investment .

*Prepared by the Research Department of the Housing Company.

†Estimated and assumed.

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Many into One"

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Wilson Rolling Partitions are lower in price than Wilson Sectionfold Partitions. Used where decorative adaptability and permanent appearance of the Folding Partitions are not so important. Their practical advantages have placed them in more than 38,000 churches, schools and public institutions.

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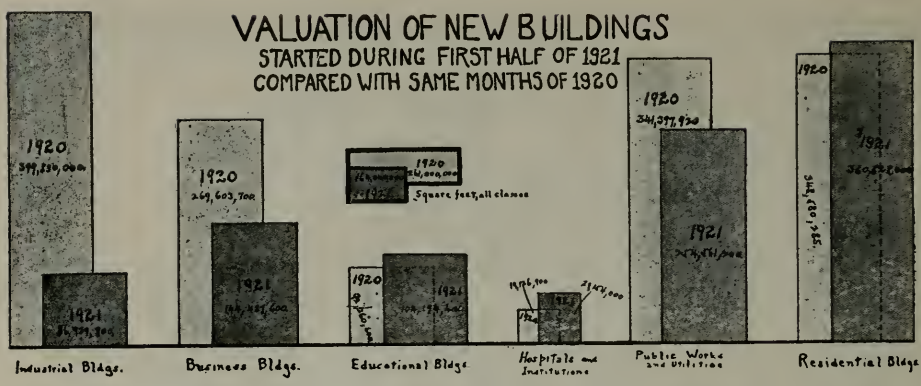


Diagram Showing Recent Building Progress

THE territory represented by the above data is principally that north of the Ohio and east of the Mississippi rivers, and includes more than 50 per cent of the population of the United States.

The great discrepancy between the drop in industrial building and the gain in residential building is natural in view of the fact that industrial building was excessive during 1916-1919, while residential building has long been below normal.

It should be borne in mind that the lower prices today tend to make current figures proportionately smaller than last year, irrespective of the difference in number or size of buildings.—From figures collected by F. W. Dodge Co.

A Basis for Wages

CLASSIFY WORKMEN BY QUALITY OF WORK

By E. T. THURSTON,
Secy., General Contractors at San Francisco*

WAGES rose during and after the war irregularly according as the various labor unions were able to control the situation in their respective crafts.

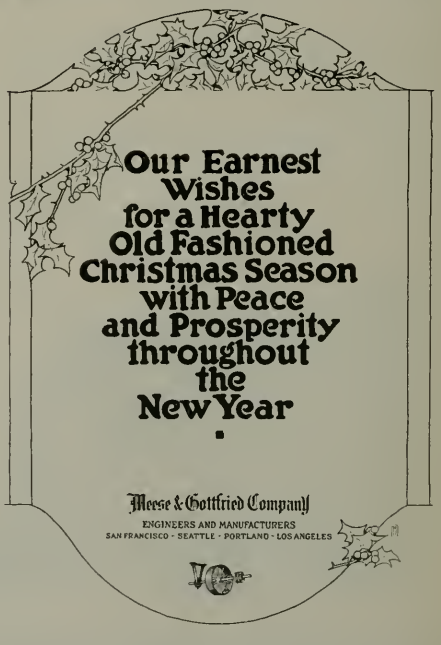
The differentials in pre-war wages were not based on the relative skill or amount of training required, nor on the personal hazard involved, nor on the relative expense of providing and maintaining an equipment of tools. They were in general established arbitrarily by individual labor unions, often in contravention of all reason and fairness. The shortage of competent mechanics in certain trades, a condition advanced in support of arguments for higher wages in these trades, is purely artificial and due entirely to the abolishment or cultailment of apprentices and the virtual closing of union charters to new mechanics.

It would, therefore, be manifestly illogical and unfair to base wage adjustments on present wages, that is to say to derive a new scale by reducing existing wages in the various trades by the same percentage. We should revert to stabilized pre-war conditions, wages and prices on which to base our readjustments. But cognizance should be taken of the malpractices and maladjustments of that period.

The mere fact that they were able to organize a union under the militant protection of organized labor has enabled certain classes of unskilled workmen, such as hodcarriers, concrete laborers, composition roofers, teamsters and truck drivers, to demand the pay of skilled mechanics, to the demoralization of the latter and the pecuniary disadvantage of the public.

Under the regulations of organized labor, building-trades workmen in general are classified with respect to the kind of material they handle rather than according to the kind or quality of work

*Bulletin of the Associated General Contractors.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BUILDING BUSINESS

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WHEN LAYING PLANS FOR THE FUTURE OF YOUR BUSINESS CONSULT THE OFFICERS OF THIS INSTITUTION

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they do. Thus the exterior brushman and the interior varnisher and finisher are both painters and command the same wage; likewise the "wood butchers" and all-round carpenters. This condition of things makes for carelessness and inefficiency. There can be no doubt that these crafts have been degraded and the earning capacity of their mechanics curtailed by reason of false standards established and enforced by organized labor.

With the advent of the American Plan, jurisdictional disputes between trades disappear forever. Why should not wage differentials as between competent mechanics in the various trades likewise be eliminated? A uniform wage for all building mechanics, with a definite lower wage for immature or "improper" grades, and the relegation of hodcarriers, concrete workers, composition roofers (except foremen), and similar unskilled workmen to the building labor class where they belong, would put an end to trade jealousies, encourage general mechanical proficiency, and obviate the confusion in payrolls that must otherwise arise when men are shifted from one class of work to another.

Big Tunnel Contract

R. C. Storrie & Co., of San Francisco, members of the Contractors' Association of Northern California, have been awarded a contract by the city of Seattle, Wash., for the construction of a tunnel to be used by that city as a part of and an extension to its present water system, and for electrical power development. The tunnel is a part of the so-called "Skagit river project," and is to be 11,000 feet in length and about 24 ft. in diameter. The total contract price exceeds $2,200,000.

The Stanley Works Issues a New General Catalog

This new catalog of 376 pages, measures 6½x9½ inches and contains additions to the Stanley line of wrought hardware, as well as the older well known products.

Considerable care has been taken in compiling this new catalog to give the hardware merchant as much information as possible concerning the Stanley products, such as weights, size and quantity of screws, method of packing, etc.,

This description will enable the hardware salesmen to intelligently sell and recommend the various styles of butts, hinges, bolts, etc., manufactured by The Stanley Works.

The new catalogs are being distributed and hardware dealers selling Stanley products are requested to ask for one of the catalogs if they don't receive one within the month.

Artist and Engineer

"There is no reason why there cannot be collaboration of the artist and the engineer," said Mr. Ferrucio Vitale, landscape architect of New York, addressing members of the Milwaukee City club on The Landscape and the City. "City Planning is principally a problem of engineering in the broad sense," he said. "It includes economic, physical and social engineering. Though cities are eternal and the plans are the same, we must be impressed with the fact that structures are only temporary, and may be superseded by more beautiful ones. The masses should be educated to see the utilitarian and artistic sides of life in bigger channels than ever before."

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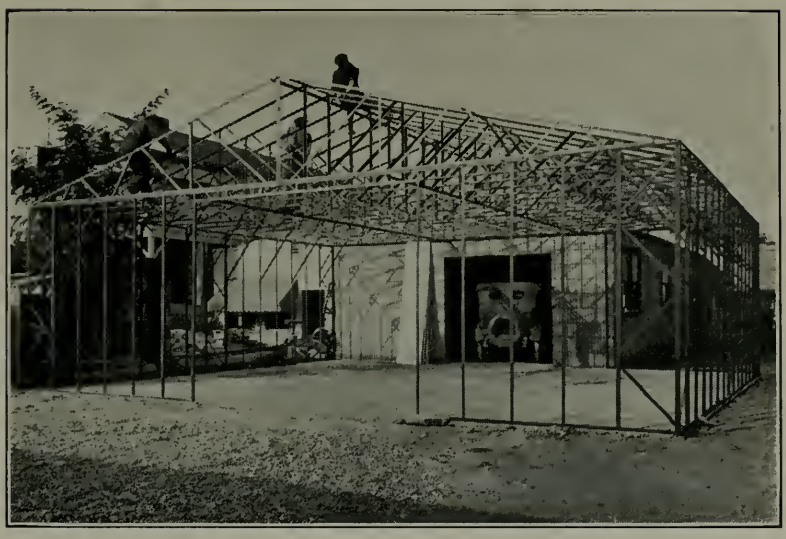

LIGHT STEEL FRAME FOR WAREHOUSE OR GARAGE

A New Type of Fireproof Garage and Warehouse

Architects whose clients are desirous of having a steel frame garage or warehouse will be interested to know that a San Jose firm—Benson and Benson—is making light steel frames for structures of this type. The firm is manufacturing a portable structure having steel frame, doors and windows with walls and roof covered with No. 26 galvanized corrugated iron. Mr. J. W. Benson, senior member of the firm, was at one time identified with one of the largest iron and steel shops on the Pacific coast, and he has used the knowledge thus obtained through association with this and other concerns, in working out a practical fireproof portable building for a comparatively low price. Buildings may be constructed almost any size and in accordance with shop plans or the plans of the architect or contractor. Of course, if special sizes are required the cost is more than the list price for stock sizes. A fireproof garage 8′ 2¼″ wide 12′ 2¼″ long and 7′ 0″ high may be purchased for as low as $100 f.o.b. San Jose, while larger buildings, 12′ 2¼″ wide, 16′ 2¼″ long and 8 feet high, cost $200 or more. The buildings are said to be neat and clean in appearance and rigid and substantial in construction. Ease, simplicity and quickness of erection add to the desirability of the structures and skilled mechanics are not required to erect them.

WAREHOUSE, SAN JOSE, STEEL FRAME AND CORRUGATED IRON SIDES

Were You Ever in Brown's Fix?

BROWN was a moderately thriving architect and engineer, and it meant a great deal to him to have a shy at the big Hatfield & Cummins project.

While the development work he had handled stood very much to his credit, still he had never been connected with any construction of sufficient importance to bring his name into real prominence.

Naturally there was a great commotion when the phone rang and Hatfield's voice came over the wire:

"Mr. Brown, we have to go ahead on the extension of our new installation at once. Bring over a contract form by noon, guaranteeing your telephone estimate of November 8th and we will sign with you.

Brown clapped down the receiver. He was a made man!

The Hatfield & Cummins patronage meant connections and prestige that would convert him into a formidable competitor for all sorts of big propositions.

But in five minutes he had lost ten years of his optimism. The estimate was not to be found. He remembered perfectly having carefully put it away where he could readily find it—although the thought of having a swing at the big job had never really grazed him.

It was too late to refigure the estimate—it must be found. In a mad scramble, Brown and his office helpers went pawing over everything in the office—but no result. Brown hasn't found that estimate yet although he gave up looking for it long ago.

His concern was not converted into prominence overnight. In the absence of an efficient filing system they had lost out in the big opportunity of years.

But Brown did not have to stub his toe twice to find out the trouble. He came into H. S. Crocker Company and told his story.

"Gentlemen," he said, "what can you do for me that will prevent a thing of that kind ever happening in my business again?

He was shown the possibilities of the Globe-Wernicke Filing Cabinet for his particular office and requirements. He learned how he could have saved a large order for his business, and how in the future he would always be able to put his finger on any piece of correspondence or office data he chose no matter when it might be needed.

Needless to say, Brown's office has been reorganized for future protection and efficiency.

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Japanese oak is brittle and resembles material cut from dead timber. It possesses neither the wearing qualities nor beauty of grain of American Oak.

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The largest individual producers of Oak Flooring in the world

OAK FMA USA

Electrical Installation at the Granada Theatre Is Praised

The very satisfactory lighting effects at the Granada Theatre, San Francisco's newest motion picture house, are attributed largely to the splendid installation of switch boards, panel boards and other distributing devices by the Safety Electric Company, 59-65 Columbia Square, San Francisco. This company is a home industry, manufacturing devices that heretofore architects believed could be obtained only from large Eastern houses.

The Safety Electric Company owns its own plant, a well equipped two story brick building, and employs a large force of mechanics and electricians—each one an expert in his line. The management undertakes to please the most discriminating and exacting customers, and that its efforts are rewarded is apparent from the numerous letters of commendation, of which the following from the architect of the Granada Theatre is an example:

ALFRED HENRY JACOBS
Architect, San Francisco

November 18, 1921.

Safety Electric Company,
59 Columbia Square,
San Francisco.

Attention Mr. Samuel H. Taylor.
Re Granada Theatre.

Gentlemen:

I am glad of the opportunity to thank you for the very efficient service you have rendered in connection with the electrical switch-boards and other electrical distributing devices furnished for the Granada Theatre.

Despite the many handicaps, due to labor and freight troubles, you managed to deliver the material in good time and in first class working condition. Very truly yours,

ALFRED H. JACOBS.

The Safety Electric Company does not confine its business to local contracts as evidenced from an order, now being filled, for four special switch boards designed for an oil refining process in the oil fields of Egypt. The equipment will be sent to New York, and thence by steamers to the land of the Cairo.

Mr. Samuel H. Taylor, a pioneer in the electrical industry on the Pacific Coast, is owner and manager of the Safety Electric Company, and he is now devoting his entire energies to it with the idea of making the company one of the foremost concerns in the country in the development of the safety switch industry.

New Exchange Manager

Mr. John L. Clymer has been appointed executive manager of the San Francisco Builders' Exchange. At the outbreak of the world war in 1914 Mr. Clymer came to the Pacific Coast as the representative of the National Red Cross to make a survey of the situation as it then existed in the Western states and lay the foundation for such an organization as might be required in the event of this country being drawn into the great conflict.

Subsequently he was active in the organization of the various war loan campaigns, and from this stepped into financial work of a kindred character. Last spring he lead the Salvation Army's state campaign as director of its appeal for funds and recorded one of the most successful campaigns of this organization since the war.

Mr. Clymer comes to the Builders' Exchange from the newly organized Retail Merchants Association, where he served as membership secretary.

Paris Prize Awarded

The Paris Prize has been awarded by the Society of Beaux-Arts Architects to Mr. Lloyd Morgan, as the result of the competition which closed August 16th, at the headquarters of The Beaux-Arts Institute of Design.

The funds for the scholarship were donated this year by Mrs. Lewis B. Preston. Mr. Morgan is from the Atelier Hirons, New York. In addition to receiving the Paris Prize Mr. Morgan was given a First Medal. Mr. J. G. Schuhmann, Jr., Columbia University, was placed second and awarded a First Medal. Mr. A. E. Westover, Jr., was placed third and given a Second Medal. Mr. H. S. Atkinson was placed fourth and awarded a Second Medal, and Mr. R. A. Fisher was placed fifth and awarded a Second Medal.

Enters Roofing Contractors' Field

Hill, Hubbell & Co., San Francisco and Los Angeles, have moved their Los Angeles offices from the San Fernando Building to a ground floor location at 120 E. Third street, where the company has a display room for its products and warehouse facilities for stock. The management has added to its lines of mastic and magnesite floorings and steel coatings, a roofing department and the company is prepared to engage actively in the contracting field in these branches of the building industry. In San Francisco the company will also enter the roofing contractors' field and will figure on composition roofs for both public and private buildings.

Award for Pacific Porcelain Company

The Pacific Porcelain Ware Company, 67 New Montgomery street, San Francisco, received from the California State Agricultural Society, the 1921 gold medal awarded annually to the California concern producing the most meritorious invention during the year. The Pacific Porcelain Ware Company's invention was a vitreous china bath spout, a contrivance that is expected to revolutionize the use of metal fitted trimmings over the rim of bath tubs. The fixture was exhibited at the recent California Industries Exposition, and attracted much attention.

UNIT SAFETY SWITCH

Would You?

Specify bare copper wire in your Electrical Specifications? Of course not.

YOUR specifications call for good rubber insulated wire that will give protection against fire and accident. And, as further safeguard, protective metal conduits are provided for them.

But, how about the most vital part of your Electrical Installations? The point of Control.—The Switchboard, or Switch?

There is where the greatest danger lurks, and there is where maximum Safety and Protection is necessary. It is the point of necessary contact by the operator and where flashes and arcing occur in the control of the electrical circuits.

Unit Safety Switchboards and Switches

are specially designed to give maximum protection. Their steel clad fire-proof design embody besides the pre-requisite elements of safety, structural features of merit worthy of the investigation of particular Architects and Engineers. — They are neat, compact and efficient, and are built in designs to meet all requirements.

"UNIT" is to the switchboard and switch what rubber insulation and conduit are to the copper wire. Both eliminate accident and fire hazards and reduce insurance cost. Worthy investments.

Our specialized engineering service is at your disposal

UNIT ELECTRIC COMPANY

450-460 NATOMA ST. SAN FRANCISCO, CAL.

UNIT SAFETY SWITCH

Completes Important Installations

The Western Safety Manufacturing Company, Inc., has recently completed installation of a dead-front and back main service switchboard in the Crossley building, San Francisco, which is said to be one of the most approved switchboard devices on the market. This building, when completed, will be occupied largely by the Associated Oil Company. The Western Safety Manufacturing Company has also completed an up-to-date installation in the Levi Strauss factory on Valencia street. Its shop is at present working on an installation of switchboard for the Sperry Flour plant in Vallejo. The F. E. Newberry Company are the electrical contractors.

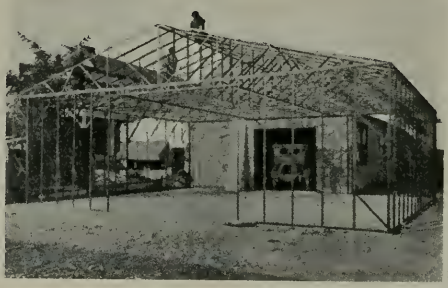
A circular letter recently sent out by this company announces that it is still doing business at 247 Minna street.

"It is our earnest desire," reads the letter, "that a newly formed company be not confused with our own, for we are anxious to avoid any complications which otherwise might arise."

Mr. C. Rieker is president of the Western Safety Manufacturing Company and Mr. Charles F. Parker is secretary and manager.

Hollywood Christian Church

Architect Robert H. Orr of Los Angeles is preparing plans for a brick church for the Hollywood Christian Church, to cost $150,000.



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may be made in accordance with architect's plans.

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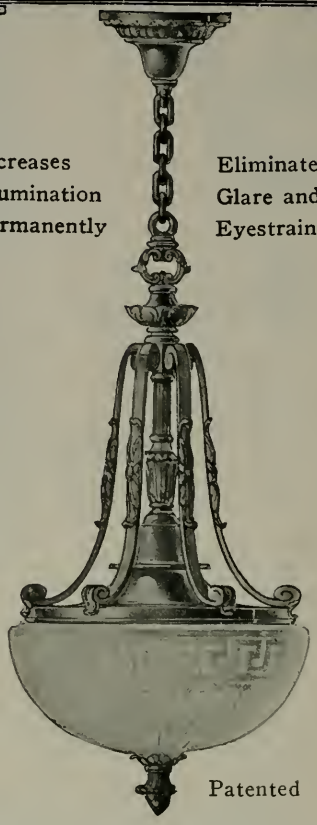
Increases Illumination Permanently

Eliminates Glare and Eyestrain



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RADIANTLIGHT designs are developed to blend with any Architectural scheme. They range from pleasingly plain to the more ornate periods.

RADIANTLIGHT gives you 49 per cent more light on working surfaces than a bare lamp.

Enclosed and dust-proof. A permanent highly polished reflector inside the bowl and protected from dust. A reflector which is easily removed and cleaned. A reflector so focused as to direct the light to working plane, without glare. A reflector that directs the light rays as scientifically as the headlight of your automobile. No shadows, rings or spots of light on ceiling.

Demonstrations cheerfully given.

Ask your Contractor, Dealer or write.

Electric Appliance Company

807-809 MISSION STREET

San Francisco, Cal.

To our Customers and Friends

MAY THE STAR OF HOPE, SEEN OF OLD O'ER THE CITY OF DAVID, LEAD YOU THRU GREATER ENDEAVOR TO THE JOYS OF LARGER ACHIEVEMENT IN THE COMING YEAR

STRABLE HARDWOOD COMPANY

HARDWOOD LUMBER
HARDWOOD FLOORING
511-545 FIRST ST.
OAKLAND, CAL.

School and Churches

Architects Carl Werner and Alfred I. Coffey of San Francisco have been selected to prepare the plans for the new Sequoia Union High School at Redwood City. Mr. Werner is busy on drawings for a new edifice to be built in Oakland for the Fourth Church of Christ, Scientist, at an estimated cost of $125,000 and for a similar structure at Thirteenth avenue and Clement street, San Francisco, for the Fourth Church of Christ, Scientist, of that city.

Christian Science Church

Plans are being completed by Architect W. H. Crim, Jr., 425 Kearny street, San Francisco, for a reinforced concrete and brick church to be erected at Divisadero and Clay streets, San Francisco, for the Sixth Church of Christ Scientist. The edifice will cost $100,000.

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No flame. No odor. No pipes. No furnaces. No danger. No dirt. Just attach cord to a base plug and *presto!*—the HULBERT ELECTRIC STEAM RADIATOR furnishes you steam heat — real honest-to-goodness Steam Heat by Electricity.

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A LIQUID FLOOR COVERING
For Outside and Inside Floors of Wood, Cement or Concrete
Standard Varnish Works

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RESIDENCE OF HON. HERB. HOOVER, SECRETARY OF COMMERCE, STANFORD, CAL
A. B. Clark, Architect *Frederick W. Snook Co., Plumbing Contractors*

This splendid home is equipped throughout with

"HAJOCA"
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MAKERS OF PLUMBING SUPPLIES
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Dealers in Boilers, Tanks, Pumps, Engines, Machinery, Etc.

We offer especially the following, subject to prior sale:

Two 80 HP Horizontal Tubular Boilers, 120 lbs. working pressure.
Two 100 HP Heine Safety Water Tube Boilers, 130 lbs. working pressure.
Ten 250 HP Marine Heine Water Tube Boilers, 175 lbs. working pressure.

Prices on application—send us your inquiries.

Office and Works:
550-558 EIGHTH STREET
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Stability

You who believe in standardization, in the stability of a good idea, in the use of equipment which will be as good tomorrow as today—you will appreciate the fact that cast iron does not enter into the manufacture of the Dunham Radiator Trap. The metals used are entirely bronze and brass.

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Structural and Engineering Materials

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Robert W. Hunt & Co.

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Chemical and Physical Testing Laboratories

New York Chicago Pittsburgh
St. Louis San Francisco Mexico City
London Montreal

Present Cost of Building Materials*

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, December 20, 1921.

All prices f. o. b. cars San Francisco or Oakland. For country work add freight and cartage to prices given.

American Institute of Architects' Fees

New work—Usual rate, 6 per cent minimum charge recommended by the Institute.
Alterations—7 to 10 per cent as a minimum.
High class residence work—10 per cent as a minimum. Editor's Note—These rates not mandatory.

Bond—1½% amount of contract.

Brickwork—
Common, $36.00 per 1000 laid.
Face, $100.00 per 1000 laid.
Common, f. o. b. cars, $15.50 plus cartage.
Face, f. o. b. cars, $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (Delivered to building in carload lots)
12x12x3 in., 11 c per square foot.
12x12x4 in., 12½c per square foot.
12x12x6 in., 16½c per square foot.
12x12x8 in., 26 c per square foot.
Hod carriers, $7.40 per day.
Bricklayers, $9.25 per day.
Lime—$2.25 per bbl.; carload, $2.15 per bbl.

Composition Floors—30c. per sq. ft.

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.00 per yd.
No. 4 rock	2.25 per yd.
Niles pea gravel	3.25 per yd.
Niles gravel	2.50 per yd.
Niles top gravel	3.00 per yd.
City gravel	2.00 per yd.
River sand	1.50 per yd.
Delivered bank sand	1.00 per yd.

SAND
Del Monte, $1.25 to $1.50 per ton.
Fan Shell Beach, $2.50 to $3.00 per ton.
Car lots, f. o. b. Lake Majella.

Cement (f. o. b. cars)	$3.44 per bbl.
Rebate for sacks, 15c each.	
Atlas "White"	$12.50 per bbl.
Medusa cement	$12.50 per bbl.
Forms	$25.00 per M

Wage—

Concrete workers	$7.50 per day
Cement finishers	8.35 per day
Laborers	6.95 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.25 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $8.35 per day.

Electric Wiring—$7.00 to $11.00 per outlet for conduit work (including switches).
Knob and tube average $3.25 to $6.00 per outlet.
WAGE—Electricians, $9.25 per day.

Elevators—
Prices vary according to capacity speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $4,200; direct automatic, about $3,700.

Excavation—
$1.55 per yard, if sand.
Teams, $10.00 per day.
Trucks, $21 to $30 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 20c per square foot.
Plate, $1.20 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 41c per square foot.
Obscure glass, 28c per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $7.85 per day.

Heating—
Average, $2.00 per sq. ft. of radiation, according to conditions.
WAGE—Steamfitters, $9.25 per day.

Iron—
Cost of ornamental iron, cast iron, etc., depends on design.
WAGE—Iron workers, bridge and structural, $8.35 per day.
Architectural iron workers, $7.40 per day.

Lumber—(Prices delivered to bldg. site)
Common, $34 per M (average).
Com'n O. P. (select), $45 per M (average)
Flooring—

1x6 No. 3—Form lumber	$22.00 per 1000
1x4 No. 1	73.00 per 1000
1x4 No. 2	70.00 per 1000
1x4 No. 3	47.00 per 1000
1x6 No. 2 and better	73.00 per 1000
1¼x4 and 6 No. 2	75.00 per 1000
Slash grain, 1x4 No. 2	48.00 per 1000
Slash grain, 1x4 No. 3	39.00 per 1000
No. 1 common run to T. & G.	35.00 per 1000
Lath	8.00 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.00 per bdle.
No. 2	.90 per bdle.
Red Cedar	1.10 per bdle.

Hardwood Floors—
Maple floor (laid and finished), 25c per foot.
Factory grade floors (laid and finished), 20c per foot.
Oak (quartered, finished), 40c per foot.
⅝ Oak (clear), 29c per foot (plain).
⅝ Oak (select), 27c per foot (plain).
⅝ Oak, quartered, sawed, clear, 35c.
WAGE—Floor layers, $9.35 per day.

Hardwood Floors (not laid)—

			Per M ft.
5/16x2"	sq. edge	Clear quartered oak	$173.50
		Select quartered oak	121.50
		Clear plain oak	119.00
		Select plain oak	95.00
13/16x2¼"	face	Clear quartered oak	210.00
		Select quartered oak	144.00
		Clear plain oak	157.50
		Select plain oak	114.00
		Clear maple	134.50
		Clear maple—white	178.00
13/16x3¼"	face	Clear maple	$134.50
1⅛x2¼"	face	Clear maple	134.50
⅜x2"	face	Clear quartered oak	158.00

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box frame windows (average) with trim, $7.50 and up each.
Doors, including trim (single panel), $10 and up each.
Doors, including trim (five panel) ..... $9.00 each
Screen doors, $3.50 each.
Window screens, $1.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $9 each.
Dining room cases, if not too elaborate, $10 each.
Labor—Rough carpentry, warehouse heavy framing, $13.00 per 1000.
For smaller work, average, $25.00 to $35.00 per 1000.
WAGE—Carpenters, $8.35 per day.
Laborers—Common, $6.00 per day.

Marble—(Not set) add 60c up per ft. for setting

Columbia	$1.90 sq. ft.
Alaska	1.90 sq. ft.
San Saba	3.25 sq. ft.
Tennessee	2.40 sq. ft.
Verde Antique	4.10 sq. ft.

Wages — Marble setters, $7.40 per day; helpers, $5.55 per day. Marble polishers and finishers, $6.00 per day.

Painting—
Two-coat work, 35c per yard.
Three-coat work, 50c per yard.
Whitewashing, 5c per yard.
Cold water painting, 9c per yard.
Turpentine, $1.08 per gal. in cases and 93c per gal. in tanks.
Raw Linseed oil, $1.00 per gal. in bbls.
Boiled Linseed oil, $1.02 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one ton purchases; 12½c lb. for less than 500 lbs.
WAGE—Painters, $8.35 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.30 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $8.00 at yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. warehouse $2.15 per bbl.
Lime in less than carload lots, $2.25 per bbl.
Hardwall plaster, $22.00 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Hydrate of lime, $22 per ton, f. o. b.
WAGE—Plasterers, $10.20 per day.
Lathers, $9.25 per day.
Hod carriers, $8.35 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.25 per day.

Reinforcing Steel—
Base price for car load lots, $3.10 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $24 per ton.
WAGE—Housesmiths, $7.85 per day.

Roofing—
Five ply tar and gravel $6.50 per square for 30 squares or over.
Less than 30 squares, $7.00 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingle, $10.00 per square in place.
Cedar Shingle, $10.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $8.25 per sq.
Reinf'd Pabco, 20 yr. roof, $14 per sq.
Recoat, with Gravel, $3.00 per square.
Wage — Roofers $8.35 per day.

Rough Hardware—
Nails, per keg, $5.25 base.
Deafening felt, $90.00 per ton.
Building paper, P. & B.,
1 ply, $3.50 per 1000 ft. roll.
2 ply, $5.50 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.00 per hank 100 ft.
Common, $1.00 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 35c a square foot (not glazed).
WAGE—Sheet metal workers, $9.25 per day.

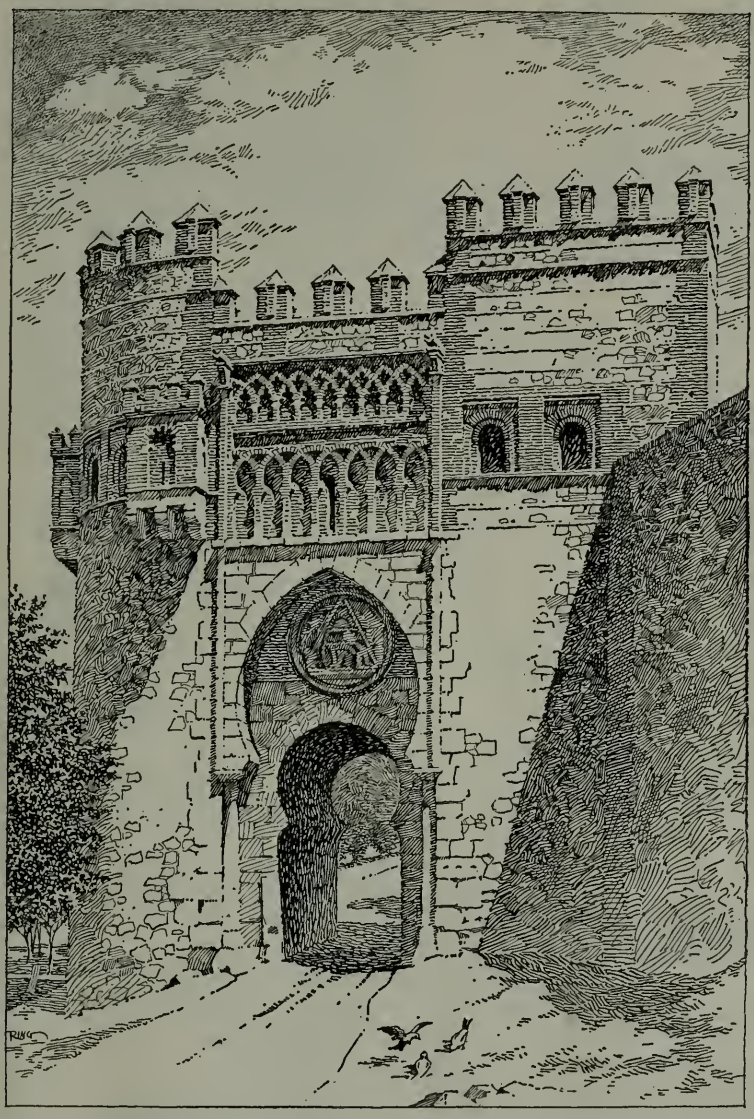
Stone—
Granite, average $11.00 sq. ft. in place.
Sandstone, average $7.00 sq. ft. in place.
WAGE—Stone cutters, $8.35 per day.
Stone setters, $8.35 and $8.80 per day.

Store Fronts—
Zouri copper bars for store fronts, corner, center and around sides, will average $1.25 per lin. foot.
Zouri Underwriters' Specification sash, $1.60 per lin. foot.

Structural Steel—$130.00 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected) $121 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft. (Includes mullions and hardware.)

Tile—White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. foot, laid.
WAGE—Tilesetters, $8.35 per day.



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Puerta del Sol
Toledo, Spain

IN SUNNY SPAIN, too, the early builders used brick with striking effects—both by itself and in combination with other materials.

Puerta del Sol is a fine example of the character and interest that can be given to the wall in combining the use of brick and stone.

Any member of this association is at all times ready to discuss the architect's face brick problems with him; and to cooperate with him to the fullest extent.

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Architects agree that Bay State adds the final touch of beauty to all buildings of cement and stucco. And it protects—for Bay State Brick and Cement Coating waterproofs walls of brick, cement and stucco. Dampness will not seep in. Driving rains cannot beat through it. Write for samples in white and colors, and Booklet No. 43.

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SASH chains made of our "Giant Metal," "Red Metal" and Steel have earned a reputation for their strength, durability, and wearing qualities during their 40 years on the market. They will be found in most of the prominent buildings of the country.

CABLE chains made of Copper and Steel are especially adapted for use on elevator, fire or any large doors where a heavy weight is used.

We also manufacture Transom, Jack, Plumbers', Safety, Basin, Bath and Tray Chains, and will be pleased to furnish further information.

See page 943, Sweet's Catalog.

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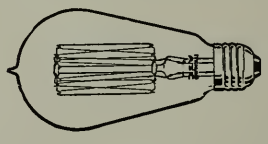

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663 Mission St., San Francisco

Architects!

Scarlata's New Method of Architecture

A new method of derermining the proportions of the parts of the five orders of architecture.

INSTEAD of using the **Module** and **Modular Measurements** of Vitruvius and Vignola with laborious computations for each detail, repeated for each variation in size or scale, Scarlata's "New Method" presents a system whereby each detail of any order is determined in feet or meters from the height of the order by multiplying the height by a FACTOR, which, for that order and that detail, never varies.

The labor of computing the dimensions to obtain proper proportions is vastly shortened and simplified, as the FACTOR for any part of any order can be taken from a clearly presented table, and, if the height has been determined, the correct proportion of that part is at once obtained by a simple multiplication.

ILLUSTRATION

Suppose the height of a Tuscan Order with Pedestal has been determined as 30 feet (equals 360 inches) and it is desired to obtain the height of the details.

From the table for this order we take the following factors:

Height of entablature	.157895
Height of column	.631579
Height of pedestal	.210527

The total height of the order multiplied by each of these factors gives at once the correct height of the detail in question, which will be found to correspond exactly with Vignola's proportions, but obtained by a vastly simplified method, as follows:

Detail	Total Height Multiplied by Factor	Height of Detail	Vignola's Proportions
Entablature	360 × .157895 =	56.84 inches	1/4 of column
Column	360 × .631579 =	227.37 inches	
Pedestal	360 × .210527 =	75.79 inches	1/3 of column
Total height	=	360.00 inches	

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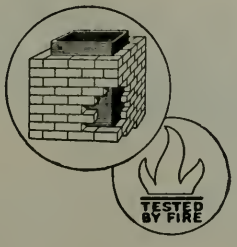

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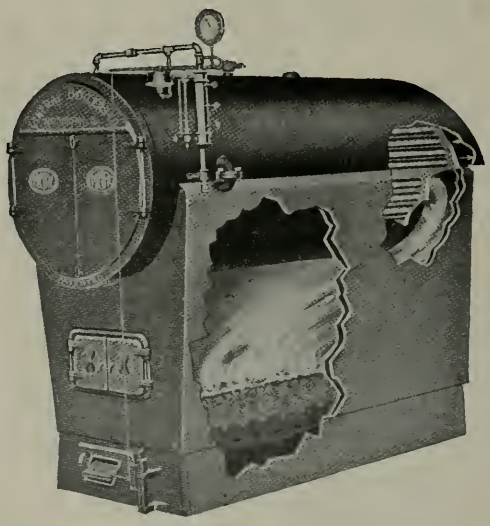

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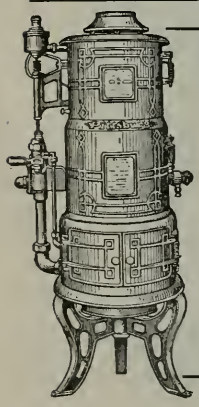

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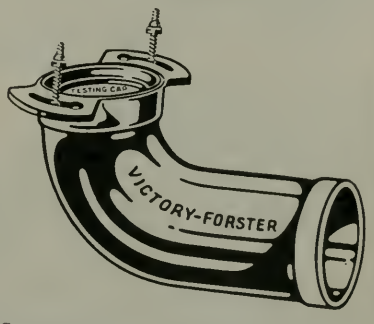

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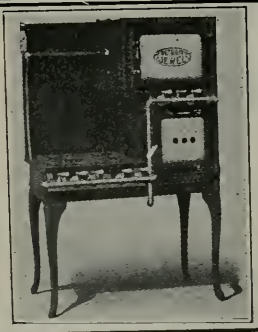

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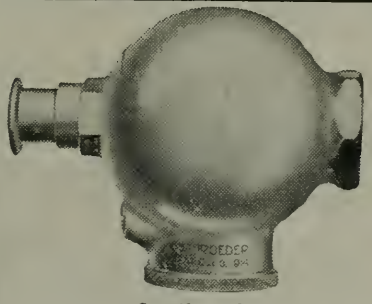

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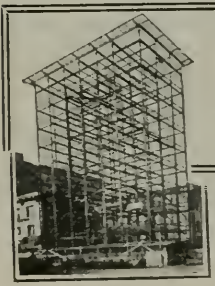

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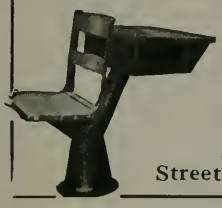

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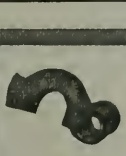

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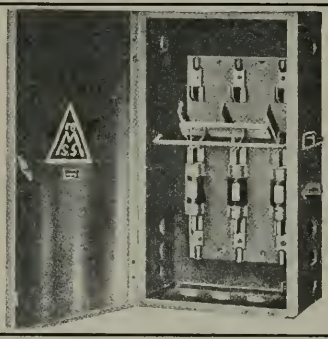

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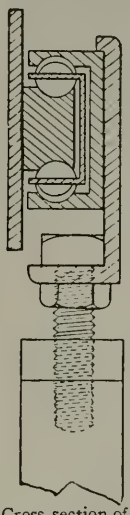

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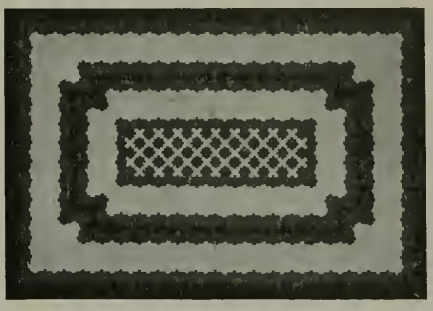

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